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The First 24 Hours: Mortality and Other Outcomes of Paediatric Emergency Care in Lagos, a Case Study

Dr Colette Solebo

A thesis submitted in fulfilment of the requirements for the degree of
Doctor of Philosophy in Health Sciences

University of Warwick
Warwick Medical School
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Dedication

To the one and only Almighty God, that keeps His Covenant and shows mercy.

Acknowledgements

I would like to acknowledge the parents, children and health professionals at the CHER of the Lagos University Teaching Hospital who so readily interacted with me in 2011.

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Special thanks go to my family whose support has been unfaltering, in particular my parents, Alfred and Bendie Susu, for their boundless patience and shamelessly biased cheerleading; my siblings Jessy and Clarence ('Hatch and CC'), constantly making time to do the school run, groceries, banking , mail drops. In addition, I would like to pay special thanks to E. Alana James for her tireless support and marvellous advice.

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Finally, a very, very, extra special thanks to Tobi and Tunde, my son and husband – my two favourite boys, who ALWAYS made space for my seemingly endless 'home-work'!

Declaration

This thesis is submitted to the University of Warwick in support of my application for the degree of Doctor of Philosophy in Health Sciences. It constitutes entirely of my own original work and has been submitted to no other institute of higher education for the award of a degree, or diploma other than the University of Warwick. All the empirical work contained in this thesis was conducted in accordance with University of Warwick's safety policy and Guidelines on Ethical Practice.

Colette Solebo

23/01/2014

Abstract

The published research and personal practice experience from Sub-Saharan Africa indicate that up to 50% of child deaths occurring in hospital-based paediatric emergency care (PEC) take place within 24 hours of admission. This study contributes to the literature, by identifying important factors influencing mortality and other care outcomes among children admitted to a named children's emergency room in Lagos, Nigeria (CHER) in this period of time.

The study accepted the theoretical concept of a multifactorial causation of population health outcomes. Three explanatory frameworks are jointly considered in order to locate the chronological PEC pathway within a wider societal and environmental reality. A systemic review of the published literature on outcomes in developing country paediatric emergency rooms (PER), revealed that delayed progress through the PEC pathway was potentially causal of poor outcomes. Factors identified as contributing to delays included socioeconomic and cultural factors affecting parental healthcare seeking and functional features of individual PER. The literature also made a case for the role of the failures of wide-scale preventive interventions towards increasing the baseline burden for PEC in these contexts. The limitations of the previous research included the inability of the research approaches to allow an appreciation of the nature of the implicated factors and their roles relative to outcomes within the chronological PEC process.

This study was conducted as a single-site case study due to the clear functional and conceptual boundaries offered by an examination of the first 24 hours in a named facility. The researcher's social constructivist worldview emphasised the value of experiential information in examining PEC processes, as well as directing the collection analysis, and interpretation of the real-life, context-situated data. The data collection process involved 3 months of non-participant observation, 18 unstructured interviews, 4 focus groups, and the collation of 6 months' worth of patient admission data. An inductive approach to analysis was followed by the triangulation of the emerging findings, and a final interpretation which pattern-matched emergent themes against theoretical linkages towards PEC outcomes.

This study identified prevailing sociocultural attitudes to illnesses in children, the use of alternative treatment modalities, public perceptions of available private care, and functional barriers in the CHER as contributing to the mortality risks and delayed progression through the in-facility PEC. The study offers recommendations encouraging the public promotion of safer use of Home-based self-medication HBSM, attendance at appropriate facilities, and improvements to available in-facility services, as well as the regulation of the emergency referral practice for private health providers in Lagos. It concludes by outlining the directions for the publication of the findings and suggesting possible future research.

Key Abbreviations and Operational Definitions

CHER	Children's Emergency Room
DAMA	Discharged Against Medical Advice
DHS	Demographic and Health Surveys
EM	Emergency Medicine
ER	Emergency Room
ETAT	Emergency Triage Assessment and Treatment
HBSM	Home-Based Self-Medication
HCSB	Health Care Seeking Behaviour
IMCI	Integrated Management of Childhood Illnesses
LGA	Local Government Area
LUTH	Lagos University Teaching Hospital
MICS	Multiple Indicator Cluster Surveys
NHIS	Nigerian National Health Insurance Scheme
PEC	Paediatric Emergency Care
PEM	Paediatric Emergency Medicine
PER	Paediatric Emergency Room
PHC	Primary Healthcare Centre
SSA	Sub Saharan Africa
TBA	Traditional Birth Attendant
U5MR	Under-5 Mortality Rate
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Developing countries	'Low-income and middle-income economies are sometimes referred to as developing economies. The use of the term is convenient; it is not intended to imply that all economies in the group are experiencing similar development or that other economies have reached a preferred or final stage of development. Classification by income does not necessarily reflect development status.'World_Bank (2010)
Curative care	Medical treatment and care that cures a disease or relieves pain and promotes recovery (WHO, 1986)
Preventive care	Healthcare service that has the aim of preventing disease or its consequences. This includes healthcare programmes aimed at warding off illnesses, the early detection of disease, and inhibiting further deterioration of the body (WHO, 1986)

Chapter 1: Introduction to the study

This chapter serves as an introduction to this thesis, which is a case study conducted to identify the factors which were involved in the outcomes among children receiving emergency care at a named facility in Lagos Nigeria, 24 hours following their entry into care.

This chapter is presented in two broad sections. Section I begins with a description of the prevalence of mortality following paediatric emergency care (PEC) within Sub-Saharan Africa (SSA). This is followed by a description of the research problem, the emergence of the research question, the nature of the study, and the conceptual frameworks used in explaining this study's approach to the problem. The section concludes with statements on the professional and contextual significance of the study.

Section II provides descriptions of the context of the study, which are relevant to the main topic of the study - PEC. Consequently, this section describes PEC within the Nigerian healthcare system, Lagos State's current child health infrastructure. The section also acknowledges the challenges encountered with regard to the greater success of child survival strategies. The study site, the Children's Emergency Room (CHER) of the Lagos University Teaching Hospital (LUTH), is briefly introduced. This section also describes the CHER and identifies the available alternative services to PEC in the context of Lagos State. The section concludes with an overview of the thesis structure, and the limitations of the study.

Section I

1.1 Background to the Study

Over 4 million children under 5 years of age died in developing countries in 2011 (UNICEF, 2012). These deaths in the post-neonatal age groups were diagnosed as primarily being due to the following conditions: pneumonia and gastrointestinal infections, malaria and HIV AIDS, whilst the key neonatal causes were: perinatal/birth asphyxia, neonatal sepsis and neonatal jaundice (UNICEF, 2012).

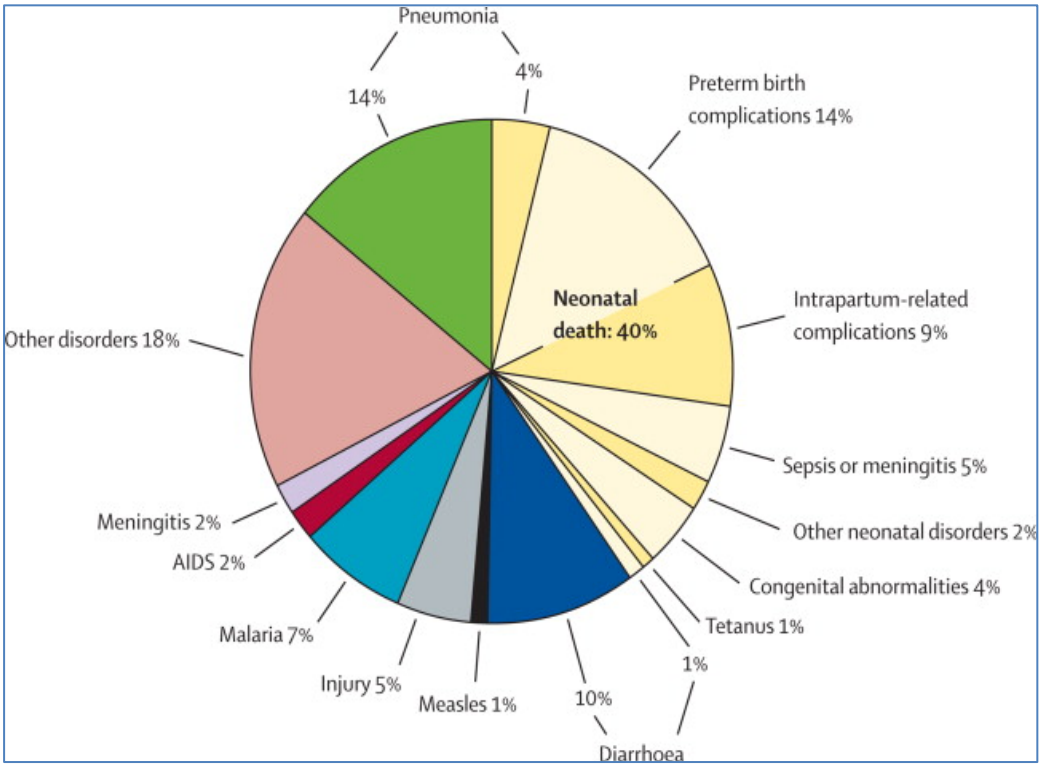


Figure 1.1: Relative proportions of causes of death for children aged under 5 years globally
Source: Liu et al, 2010

Of these causes, deaths from acute diarrheal and respiratory tract infections have remained dominant among the under-5 year age group, responsible for over 50% of all child deaths in that age group in 2011;700,000 children died from diarrhoea and 1.3 million children died from pneumonia (UNICEF, 2012). The global burden of

new infections and resurgences of acute, severe diseases have been reported among the developing populations of SSA and Southeast Asia (UNICEF, 2012).

Although centralised data from healthcare systems in developing countries are scarce, it has been estimated that every year approximately one third of children suffering from acute infectious illnesses as well as trauma in these countries, will seek emergency care at a hospital-based facility (Heuveline and Goldman, 2000, Veirum et al., 2007). Evidence from across the SSA region specifically, suggests that as many as 50% of the deaths following presentation at hospital for these acute causes occur within the first 24 hours of admission as an emergency (Molyneux, 2001, Abdurrahman, 1983, Aikhionbare et al., 1989, Wammanda and Ali, 2004, Molyneux et al., 2006, Gamatie et al., 1994, Menge et al., 1995, Chawla and Haufton, 1988).

My personal experiences of clinical practice in PEC in the SSA region whilst working as a junior doctor in Lagos Nigeria between 2001 and 2002, allowed me to witness significantly high numbers of child deaths. Within a few weeks of commencing work, I realised that the majority of children who were certified dead in the CHER, had been admitted to the hospital within the last 24 hours. In seeking to understand this, I engaged in conversations with more established clinicians within the CHER. I also began a personal correspondence via email, with emergency care paediatricians in Malawi on this issue. These communications enable me to identify that this disproportionate presentation of in-care child mortality was of general concern throughout the child health profession in the region (Molyneux, 2010).

In response to this, I conducted a scoping review of the literature on PEC in developing countries. This uncovered the existence of research studies describing

individual paediatric emergency room (PER) outcome patterns for various levels of hospital care. The studies were retrieved using a single electronic database: EMBASE. This provided an estimate of the relative quantity and variety of research designs, which had been applied when examining hospital-based PEC populations and their outcomes. The scoping review was then followed by a definitive systematic review, which is reported at length in Chapter 2. This sought to identify more thoroughly:

1. The types and examples of factors implicated as potentially causal of outcomes, with a special focus on PEC mortality outcomes.
2. The breadth of research designs currently focused on examining PEC outcomes.

Overall, the reviewed body of work represented findings from over three decades of clinical practice within tertiary PEC centres in different parts of the SSA region. These themes reflected biological, socioeconomic, local and systemic organisational factors, which had been identified as important in child mortality in developing populations using multi-factor models, such as that of Mosley and Chen (1984).

The main categories of topics from the studies involved:

1) The existing care burden on the health system:
    i) Systemic failures in the wide scale preventive interventions for communicable diseases (Abdurrahman, 1983, Aikhionbare et al., 1989, Wammanda and Ali, 2004, Gamatie et al., 1994, Menge et al., 1995, Chawla and Haufton, 1988).
    ii) The synergistic effects of multiple infectious states and malnutrition (van Norren et al., 1986).

2) Factors affecting parental healthcare seeking behaviour (HCSB) along the PEC pathway :
    i) Socioeconomic and cultural factors influencing the initiation of seeking care for children's emergencies (Aikhionbare et al., 1989, Wammanda and Ali, 2004, Gamatie et al., 1994, Tipping and Segall, 1995) - limited funds for initiating transportation (Razzak and Kellermann, 2002).
3) Failings within PEC service delivery and organisation:
    i) Absence of definitive emergency transport (Roudsari et al., 2006), the relative location of available hospital and clinic facilities (Kobusingye et al., 2005, Baker, 2009a, Baker, 2009b, Chudi, 2010).
    ii) Non-viable road networks (Chudi, 2010, Razzak and Kellermann, 2002).
    iii) Failings within PEC service delivery at the destination hospital facilities. The main areas of emergency service quality which have been identified as deficient within hospital facilities in developing countries. These included: ineffective and poorly organised triage, appropriate clinician expertise, available equipment and medication, and the effective organisation of support services, such as laboratories and blood banks (Gray and Maclennan, 2008, Nolan et al., 2001, Molyneux, 2001, English et al., 2004a, English et al., 2004b) .

These are discussed in detail in Chapter 2; however, it is important to provide a brief discussion of the findings here regarding the role of the first category. The literature identified in this review demonstrated the importance of wider population public health factors on the nature of attendance at PEC facilities, and by extension the outcomes. For example, one of the earliest studies reviewed identified the impact of the absence of the full effect of wider-interventions for communicable diseases,

resulting in a high entry burden of patients with preventable infections (Abdurrahman, 1983). The study used descriptive methods to establish the high prevalence of deaths from specific infections, namely measles and acute respiratory tract infections, in the population attending their PER in Zaria, Nigeria. In this way, the study was able to acknowledge the importance of the timing of this examination of the Zaria population relative to the recent implementation of the Expanded Programme of Immunisation (EPI) in 1979. From this, the author made recommendations for practice, suggesting that retaining the focus on reducing population levels of prevalent disease conditions, was essential in pre-emptively countering high mortalities following PEC.

When in a later study from the same facility (Aikhionbare et al., 1989) the patterns from these same infectious diseases remained relatively unchanged, the authors were then able to suggest that the EPI programmes limitations were systemic- level factors influencing the PER attending population, and by extension the risk of child deaths. This further established that this sustained prevalence of acute diseases was a relevant point for intervention at a higher level aimed at population-wide coverage in Nigeria. Further studies on the failures of preventive national-level measures from other centres across the SSA region using similar descriptive methodologies, also identified this as a systemic, rather than a strictly PEC based, issue (Chawla and Haufton, 1988, Menge et al., 1995).

In summary, the first identified category solidified the relevance of the population levels of infectious disease, and the biological influence of multiple infectious states among children, as seen during the scoping review. The last two categories highlighted factors affecting decision-making within households, and those identified as PER-based institutional barriers to accessing care. A primary effect

identified following these two groups of factors was how they affected the progression of sick children towards effective care. This consideration of the three categories helped to clarify the types of factors, which had the most direct influence on outcomes.

The two categories of factors involved in healthcare seeking and service delivery presented a similar pattern to that found in a well-known model used for assessing emergency obstetric and perinatal mortality risks based on delayed access to care. This model, first formally propounded by Thaddeus and Maine (1994), highlights three points for delay in a patient's engagement with healthcare services, resulting in worsened odds of maternal mortality. These include:

1. The delay in making the decision to seek care when experiencing an emergency.
2. The delay in reaching an appropriate facility once the decision has been made to attend care.
3. The delay in receiving adequate and appropriate care within the PEC facility.

Placed against the categories from my review, the similar importance of paediatric emergency HCSB and failings in the local facility infrastructure, suggested that any research exploring these and other factors, had the potential to identify important mortality risks in a named PEC attending population.

The conclusion of Chapter 2 (section 2.6) in summing up this systematic review shows in detail the limitations in the pre-existing literature on PEC outcomes in developing countries. First, much of the research was primarily designed as descriptive analysis; stating the prevalence of identified demographics and providing

only sketchy descriptions of the studied contexts. A number of the authors whose work was reviewed addressed the potential influence of some factors on the reported outcomes in their closing commentaries, with causality largely being extrapolated and implied. Where regression analysis examined expected causal relationships, the lack of detailed, contextually relevant variables limited the weight of the evidence. Direct associations were shown to be confounded, and variables of association were found not to be representative and/or relevant to the PEC process. A salient example involved the difficulties with directly establishing lower socioeconomic status as being predictive of poorer outcomes in PEC, which was confounded by issues related to individuals' access to care, most commonly their overall difficulty in obtaining transport to the facilities (Hamid et al., 2005, Molinero et al., 2009, Bamgboye and Familusi, 1990).

The main limitation identified from the reviewed literature was that it did not provide the depth of description able to appreciate subtle differences in potentially important features of these factors from study to study. Therefore, the study presented in this thesis was based on the need for a suitable research design able to examine PEC populations and settings more closely whilst remaining sensitive to the social and functional context. Informed by the pre-existing literature findings and collated personal practice experience, the research question was framed as:

> *What are the factors that influence the risk of mortality and other outcomes among children, within the first 24 hours after admission to a tertiary CHER in Lagos, Nigeria?*

The following section describes the conceptual framework explaining the roles of factors in outcomes of PEC.

1.1.1 A Conceptual Understanding of Health Outcomes - The Framework for the Research

The impact of multiple factors on health outcomes has become a centrally accepted premise in the field of public health and epidemiology. This understanding has evolved from the continuing development of theoretical explanatory models such as: the bio-psycho-social model of health, famously espoused by Engel (1977), and the ecological framework of Urie Bronfenbrenner (Bronfenbrenner, 1979). The basic premises of these models urged health professionals to accept that social, psychological and behavioural factors in the life of a patient were just as responsible for illness as the biological agents of disease (Engel, 1977).

Bronfenbrenner (1979) identified the child as being at the centre of outwardly expanding spheres of social influence, upon which he/she exerts influence. As such, all development should be seen as stemming from these inward and outward interactions with the family (microsystem), community (exosystem), and wider society (macrosystem, Figure 1.2).

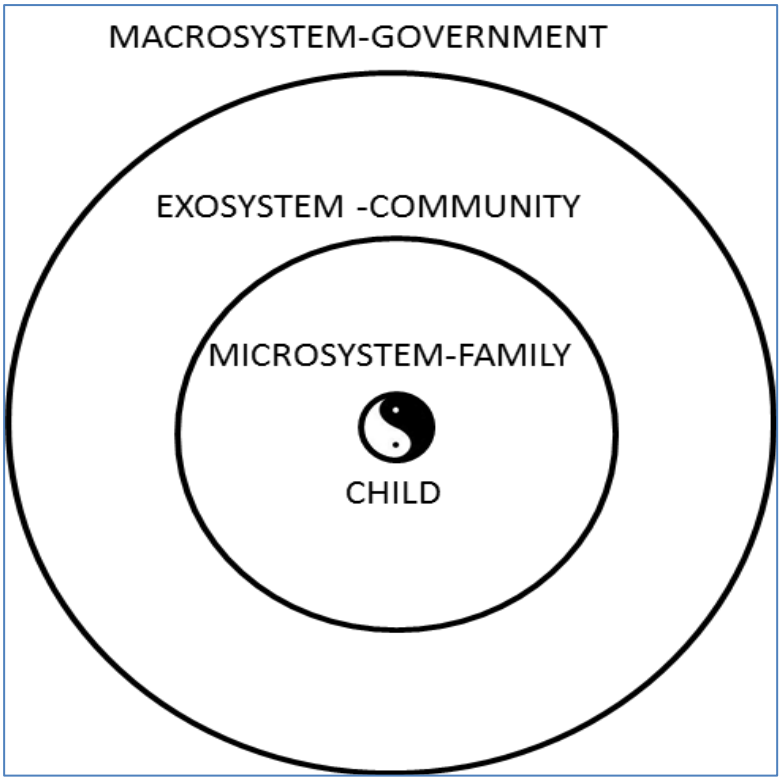


Figure 1.2: Bronfenbrenner's Ecological framework (1979)

Henry Mosley and Lincoln Chen designed a framework showing their theoretical assumption of the multifactorial causation of health outcomes among children in developing countries (survival and mortality) (Mosley and Chen, 1984). Their model presented theorised causal linkages between social factors, (individual, household and community level) and health practices/behaviour on modifying outcomes along a spectrum of risk (Figure 1.3). These linkages were able to emphasise the problems faced in these contexts; socioeconomic barriers to community level and household level engagement with the overall healthcare system. This model was therefore well-placed to identify how to plan and implement potential interventions in order to encourage better health service uptake in developing countries (Mosley, 1983, Mosley and Chen, 1984).

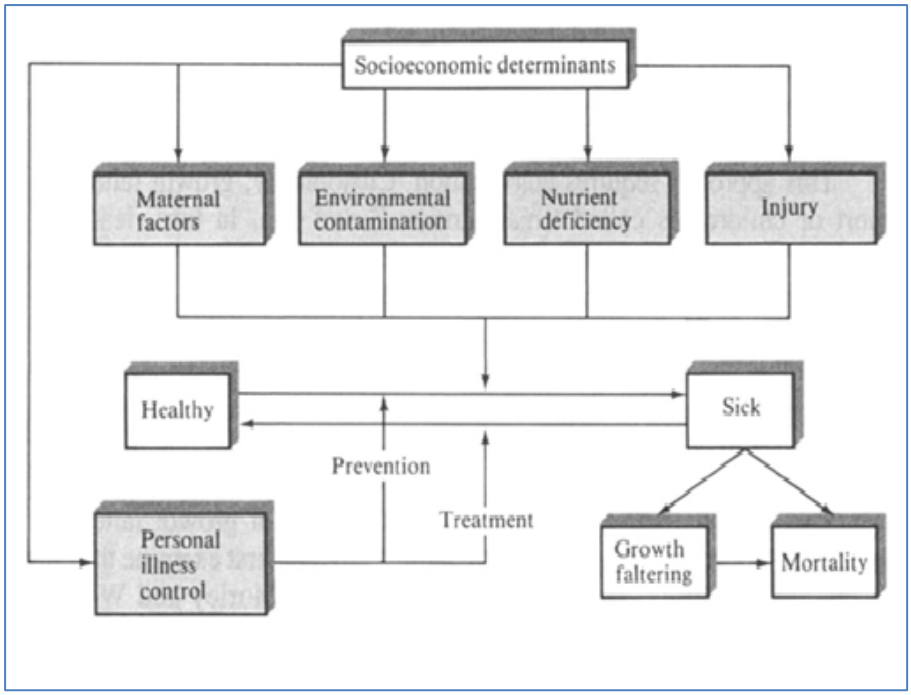


Figure 1.3: Mosley and Chen framework

PEC is itself a chronological process: children are in transition from their homes to care within PEC facilities, where they present with an outcome (Baker, 2009a, Baker, 2009b, Molyneux, 2009, Kissoon and Goldman, 2007). The pathway exists in a dynamic continuum, acknowledging the primary initiation of care-seeking following the breakdown of prevention at the household level. It also allows an appreciation of the transition through the home and community to the emergency and critical care hospital-based environments. This model therefore represents a microcosm within which wider theoretical models expounding the factors/determinants of population-based health outcomes can exert an influence. However, the ways in which these higher-level groups of factors direct their impact on the outcomes, are in turn, uniquely qualified by the chronological PEC pathway itself (Figure 1.4).

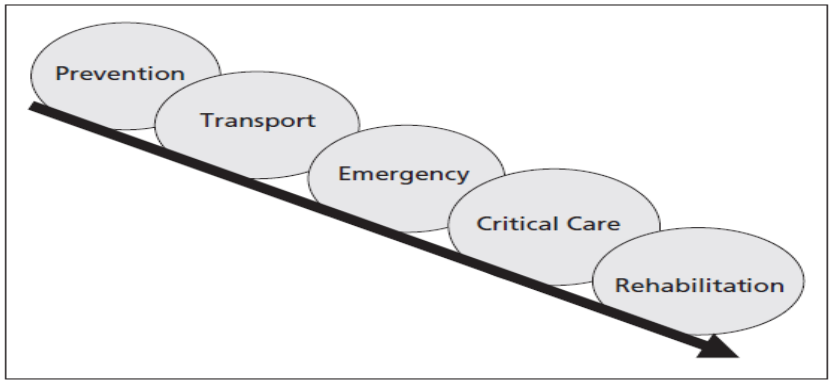


Figure 1.4: Paediatric Emergency Care pathway
Source: Kissoon and Goldman, 2007

Therefore, in considering the PEC process as embedded in the ecological representations of community and environment, what emerges is a 'super' framework. This is made up of the concentric sphere framework of Bronfenbrenner, Mosley and Chen (1984), the two-stage determinants framework, and the Kissoon process model for PEC. This joint consideration of the existing models was applied, rather than attempting to reinvent the work of these authors, to emphasise the overlapping areas of these three independently designed frameworks, with respect to PEC (see Figure 1.5 below).

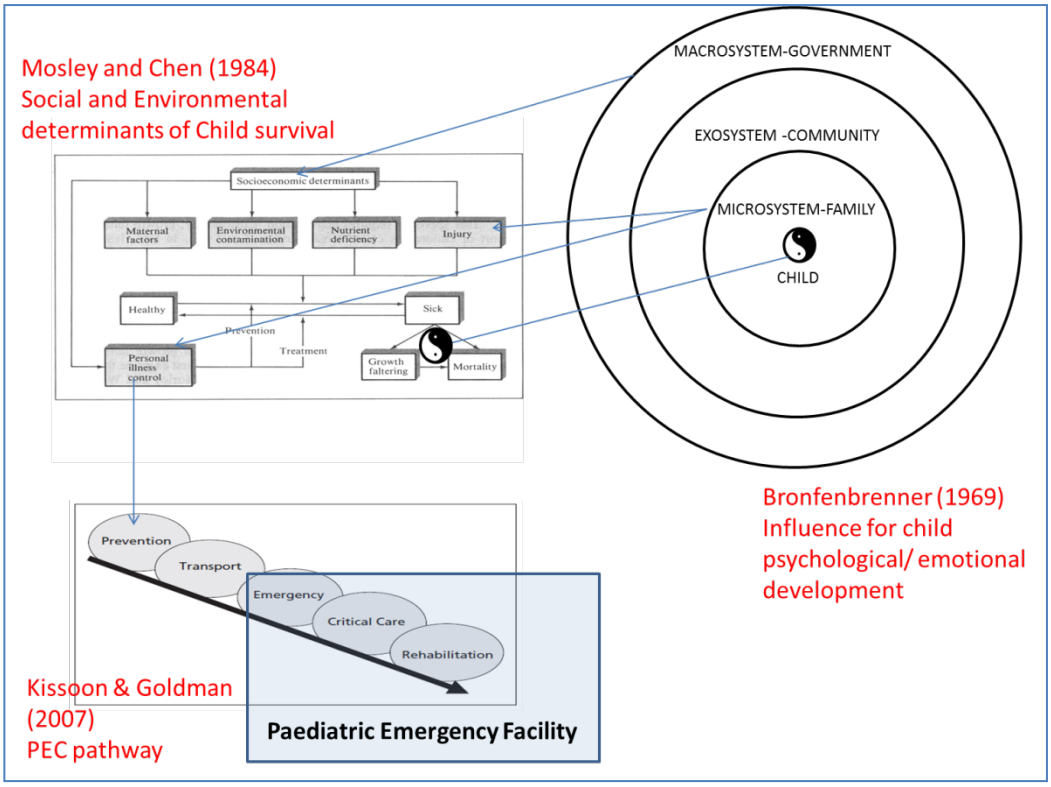


Figure 1.5 The joint appreciation of the interactions in the "super framework" employed in this study

Indeed, adaptations of theoretical models in this way are known to provide an easy means of increasing the range of key factors which can be identified and subsequently explored (Hausmann-Muela et al., 2003). This is of particular value in a study such as this, where the objective is not to attempt new theoretical advancements. This amalgamation of the previous theoretical models emphasizes the simple linear linkages between common/similar components on the frameworks. These linkages acknowledge the roles of parents and households (pre-illness) and how they engage with existing services (PEC in particular) once prevention/illness control has failed. All through this process, the child carries with him/her membership of the concentric spheres of societal influence (family, community, governments).

This ‘super’ framework thus encompasses a cascade of events as follows:

(a) The breakdown of prevention (population-level) and personal illness control results in a child becoming unwell. This implies the interaction of different socioeconomic, environmental and biological factors.

(b) There has also been a failure of personal illness control so the child has not recovered to the healthy state (in the home/community).

(c) The carers have sought (personal illness control) treatment in a PEC facility.

Therefore, the PEC process can be thought of as being composed of a continuum of events, involving social interactions (parents, children and health professionals), within the environmental contexts relevant (home) and leading up to (community, first aid) the definitive PEC within hospital.

The published research into PEC outcomes in developing countries in the SSA region received a vital contribution with the insight gained by the seminal multi-centric 2001 study by Nolan et al., which used mixed methods to investigate overall care quality within SSA PEC. Molyneux (2001), commenting on some of the limitations in the PEC literature as a whole, identified the benefits of applying research methods which would allow deeper explorations of the PER context and children's experiences within individual settings. In her concluding remarks on the frequent use of demographics for studying outcomes among PEC populations, she expounded that 'a logical next step' in this field would involve a detailed exploration of what happens to children admitted to hospital for PEC in developing countries.

This current study's review of the literature also identified these limitations in the pre-existing literature. By similarly espousing the potential for appreciating a greater breadth of factors from fusing survival and PEC focused frameworks, this study's

methodological choices were firmly fixed towards using a design, which could incorporate the use of both narrated and observed experiences.

1.1.2 Outlining Methodological Choices and Objectives for the Research

From the stated research question, the intent to become aware of influential factors towards PEC outcomes has been made explicit. The question was considered against both the acknowledgement of the limitations of the existing literature and the conceptual framework linkages.

However, the primary focus was to conduct a study using participants' experiences based within PEC in a developing country, in order to acquire a deeper appreciation of the process and its outcomes. This required the adoption of interpretative and epistemological stances within the qualitative paradigm of social constructivism. It thus became essential to strike a balance between the demands for the intellectual breadth of naturalistic enquiry against the practicality of examining a selected PER.

Both Molyneux (2001) and Nolan et al. (2001) had identified the advantage of the qualitative research tradition for providing a detailed description of the problems encountered in first level/hospital-based care for children, including PEC. Embracing the complexity of the lived experiences of groups and individuals in a selected setting reflects the tenets of social constructivism (Guba and Lincoln, 1994, Lincoln and Guba, 1985). This worldview not only encourages the contextual characterisation of participants, but also elevates the meaning derived from a social environment by incorporating 'what is said, done or observed' from as many individuals' viewpoints as accessible (Lincoln and Guba, 1985).

It is in examining these constructs (viewpoints and experiences) at a point of convergence in a constructivist study, here a selected PER, that the required reality can be dependably derived upon (Lincoln and Guba, 1985). The social construct required here was based on accessing the ontological characterisation of the lived experiences of members or 'actors' within the defined natural setting, the PER (Guba and Lincoln, 1994, Lincoln and Guba, 1985). Personal experiences become accessible following the telling of stories, shared happenings and participation (Lincoln and Guba, 1995). As such, experiential knowledge is best gained from those involved or being involved in the events being observed and studied (Berg, 2008). Such an approach additionally provides access to an understanding of any effects of the chronological order of the process relative to the outcome (Hak and Dul, 2009). Thus, a picture of the PEC process emerged, from which influential outcome factors were identified, whilst also maintaining an awareness of the chronological and sociological context. Further details on the social constructivist stance of this study are provided in Chapter 3 (section 3.2.1 Selecting a Stance).

The literature reviewed in Chapter 2 highlighted the individuals involved in the social interactions within the PEC process as parents, health professionals and children, and consequently these were selected as the primary sources of experiential information for this study. This allowed different perspectives of the PEC process to be available from the experiences of these multiple groups of participants. Therefore, the data collection methods selected were considered based on their abilities to ensure the proximity of the researcher to the participants of the study. The selected methods are well-known within the wider qualitative tradition, and they included: interviewing, direct observation and focus groups (group interviewing). Each of these facilitated communicating with participants and a shared involvement of their

experiences within the setting, thereby fostering a deeper appreciation of the participants' subjective experiences (Hammersley and Atkinson, 2007, Luders, 2008).

The working objectives stated below, represent the final result of the iterative process towards acknowledging the theoretical roles within the PEC process, and the practical concerns in identifying the type of data required for the desired naturalistic interpretation. This was all undertaken whilst keeping in mind the need for selected options to collectively represent a practical, minimally biased, and defensible solution to the question posed (Creswell, 2009).

The working objectives were:

1) To describe the PEC pathway experiences of children presenting to emergency care at the CHER in relation to their outcomes, drawing upon direct observations and interviews with parents/caregivers.

2) To identify the range of opinions of health professionals working in the emergency room (ER) at CHER regarding the causes of ER mortality and other outcomes.

3) To arrange and triangulate the experiential data collected from the objectives stated above to ensure the validity of the findings.

4) To use an inductive approach to explore the relationships among factors and wider categories in order to understand both disparate and converging viewpoints, and to determine the strength of evidence for any emerging conclusions.

5) To compare and interpret the emerging propositions concerning the data with the patterns of effect among representative factors/determinants in the wider frameworks on causation of outcomes, in order to better understand the influences on PEC outcomes in CHER, Lagos.

1.2 Selecting the Case Study Design

From the objectives stated above it became clear that the final overall design needed to incorporate the qualitative data collection tools of interviews, focus groups and observations in such a way as to produce a valid interpretation, worthy of answering the question. The use of a qualitative paradigm for the study as a whole was due to the focus on the 'process' and 'outcomes' involved in attending PEC. Merriam (1998) outlined the value of being able to understand outcomes by exploring their relevant processes. The impact of multiple groups of determinants within complex non-linear interactions means that direct causality is difficult to ascertain; however, a context-based understanding of processes, and their outcomes, provides a useful basis for identifying factors and at least some of their roles in the examined pathways. This naturalistic investigation can be followed towards a series of designs, all guided by the stated focus. In this paradigm, Creswell (2007) and other authors have acknowledged the following as key designs, which can be considered: phenomenological, ethnographic, narrative and case studies, once the focus of the naturalistic enquiry is determined.

This investigation of the CHER in Lagos was framed to encompass the experiences of patients within a pre-defined, bounded period of space and time. These experiences included contemporary on-going events, as well as reports or

narratives of prior patterns/happenings within the context. From the research question, the area of convergence of the enquiry was defined by:

a. The CHER's physical and functional position in the social experiences of children seeking PEC.
b. The importance of the first 24-hour period, as illustrated in the literature and in practice.

The circumscribed area of this enquiry represents a 'bounded system', which is considered as essential for the use of a case study as the primary research design (Yin, 2009, Merriam, 1998, Creswell, 2007). Case studies present an opportunity by which to investigate contemporary phenomena within their real-life context, especially when such phenomena are deeply influenced by the context (Yin, 2009). The complex social environment of an ER represents a truly context- embedded 'bounded' system ripe for exploration (Yin, 2009, Cooper et al., 2011).

Qualitative designs such as case studies, ethnography and phenomenology use the social constructs of experiential accounts in order to build naturalistic interpretations. Where they primarily differ is in their application towards a specified enquiry. Although discussed in greater detail in Chapter 3, the primary feature of this research, which led to these alternate designs being rejected, was the well-circumscribed practical and theoretical boundary represented by the CHER's admissions process. The focus of the study on factors and processes, rather than the essence of the experience (Creswell, 2007), eliminated phenomenology. A phenomenological focus would have been to compare experiences for the inherent meanings found by participants, whereas here, the focus was to glean details concerning the factors and their linkages from experiential accounts.

A purely ethnographic study would allow an appreciation of the emerging evidence of a culture or routine(s) within a system, such as that observed within PERs (Hightower, 2010). Such a design also favours explorations seeking to better understand the cultural implications of the membership of participants in the wider culture by virtue of their placement in the researched settings (Creswell, 2007). Case studies examine the relevance of the routines and culture relative to the studied process. The focus of this study was to identify and observe the factors of the PEC process, potentially as affected by culture as a factor itself, not the focus; indeed the focus was on these factors' influence on outcomes. Further details about how this study justified the use of a case study design, how it defined the boundaries of the exploration and accommodated the use of all these sources of information, are presented in Chapter 3.

The interpretive strategy for the collected experience-based data was aimed at matching the patterns within the data with those suggested by the complex conceptual processes; 'pattern matching' (Yin, 2009). Although this is described in detail in Chapter 3, the following section briefly introduces the key interpretive stages in this study, and these included:

a. Acknowledging the theoretical patterns of interest from the conceptual frameworks described in the literature.

b. Identifying emerging patterns and their representative propositions from within the data.

   Analytic induction allowed the context to tell its own story. Induction of meanings from data has been found vital in permitting a fresh and contextually representative view of the data. This approach helps greatly where challenges

to existing theory or the development of new theory are required (Miles and Huberman, 1994). Within case study designs, the additional advantage of induction is how it allows a single setting or series of cases to illustrate how theorised relationships are applicable in specified individual settings (Gilgun, 2001, Yin, 2009).

c. Comparing multiple viewpoints with one another - triangulation.

   The acceptance of multiple viewpoints within a qualitative enquiry helps produce a balanced interpretation of emerging evidence events, routines and behaviours(Stake, 1995, Kelle and Erzeberger, 2008). Here, the viewpoints emerged from the different participants in the study. Triangulation allows this approximation to either a centre point of agreement, or produces a complementary view of an examined issue (Denzin and Lincoln, 2005).

d. Testing the propositions against the wider patterns as theorised in the conceptual frameworks (Yin, 2009).

   The detailed descriptions afforded allow for the elucidation of important dis-confirmatory patterns, often used to address problems in those settings or to identify areas for intervention. It is the eventual comparison of these findings against existing patterns that constitutes the pattern-matching focus of the interpretation. Here, the super framework's linkages were explored in light of the theory and existing literature, against the empirical findings

1.3 Significance of the Study

The first 24 hours spent in emergency care in hospital represents the onset of definitive care for a child. This period, in principle, encompasses what is known as 'the golden hour', the 60 minute period closest to the acute event/exacerbation of

symptoms (Lerner and Moscati, 2001). It is believed that critical care interventions are most beneficial in saving lives and reducing disability within this period of time (Lerner and Moscati, 2001). This study focused on this period due to the vast amounts of relevant prognostic information usually available about children at this time, as well as due to the relevance of this period for PEC mortality as identified in the previous literature on SSA.

The literature, described above, espoused a purely cross-sectional approach to describing PEC risk factors, such as disease prevalence. This current study has contributed to this body of work by creating the opportunity to observe these risk factors in a dynamic series of real-life instances whilst engaging in the processes within a named PEC facility as a case study. This is the first time that the CHER outcomes have been explored using case study methodology in order to examine the outcomes within chronological PEC and the wider contexts. As such, the study forms the basis for a new series of methodological perspectives to be applied to studying child mortality risks in similar settings.

Nigeria in West Africa was the host country for the study. This country currently has the highest under-5 mortality rate (U5MR) in the SSA region; in 2011 alone, the number of children aged less than 5 years who died was over 800,000 (UNICEF, 2012). Current population based estimates place the proportion of Nigeria aged less than 15 years at about 40% of the total population of 100 million people, as recorded during the most recent census in 2006 (NATPOPCOMM, 2006).

In the absence of better data, if the care-seeking estimates stated above are to be believed, then over 13 million children are at risk of presenting at a PEC facility this year alone in Nigeria (ibid.). This study therefore represents a useful investigation of

an underexplored area of risk to Nigerian children, and presents the opportunity for identifying points at which viable interventions could be placed. This could potentially contribute to a reduction in child mortality in this country.

The significance of this study in the wider regional context of SSA involves a projected rise in the number of children who will be presenting for urgent care over the next few years. The trends observed over the last two decades have shown that children aged 10-15 years in developing countries are increasingly at higher risk of mortality following injury compared to all other age groups and regardless of gender (Smith and Barss, 1991, Chandran et al., 2010). This indicates the potential for a rise in the PER population due to injuries. As such, this study's identification of the salient PEC risks represents a useful first step in awareness towards preventing deaths among a growing at risk PEC population.

Finally, research funding towards studying child health and survival in developing countries, especially those in SSA, has traditionally been preferentially directed towards population-based evaluations of risk. This has supported global partnerships since the Alma-Ata Declaration and are directed towards developing wide scale interventions for risk prevention (Victora et al., 2003, van Norren et al., 1986). The value of the information provided by this study is in its ability to equip health professionals working within PECs in similar settings to that in Lagos, Nigeria, with relevant data for potentially identifying features in their practice requiring interventions, such as emergency triage assessment and treatment (ETAT), as shown by the impact in Malawi and Brazil (Robertson and Molyneux, 2001, Tamburlini et al., 1999). This has the potential to support a stronger position from which to negotiate for future funding for studies based within curative care.

Section II

1.4 Describing the wider context: Child Mortality in Nigeria

1.4.1 Child Mortality Trends and Causes of Death in Nigeria

Nigeria, the host country for this study, currently has the fourteenth highest annual overall child mortality rate at 124/1000 live births. However, the country has made consistent progress in this indicator, which has shown steady progress since the 1970s, with the country consistently being rated by UNICEF as one of the top three for its annual reduction in the U5MR (UNICEF, 2012). The levels of child and under-5 mortality in Nigeria has steadily declined, from almost 290/1000 live births in 1960, the year of colonial independence, to projections of well below 180/100,000 live births for 2012 and beyond (WORLD_BANK, 2012). Figure 1.6 demonstrated this trend, which was confirmed by UNICEF in 2010, when the U5MR for Nigeria was reported at 143/1000 live births (UNICEF, 2012).

Primary biological causes for under-5 mortality in Nigeria are the same group of communicable diseases as implicated in the regional mortality risks, described earlier, namely neonatal causes, malaria, diarrhoea, whooping cough, tuberculosis and bronchopneumonia (WHO, 2006), and these conditions have been implicated in child mortality in Nigeria for over four decades (Ogunjuyigbe, 2004).

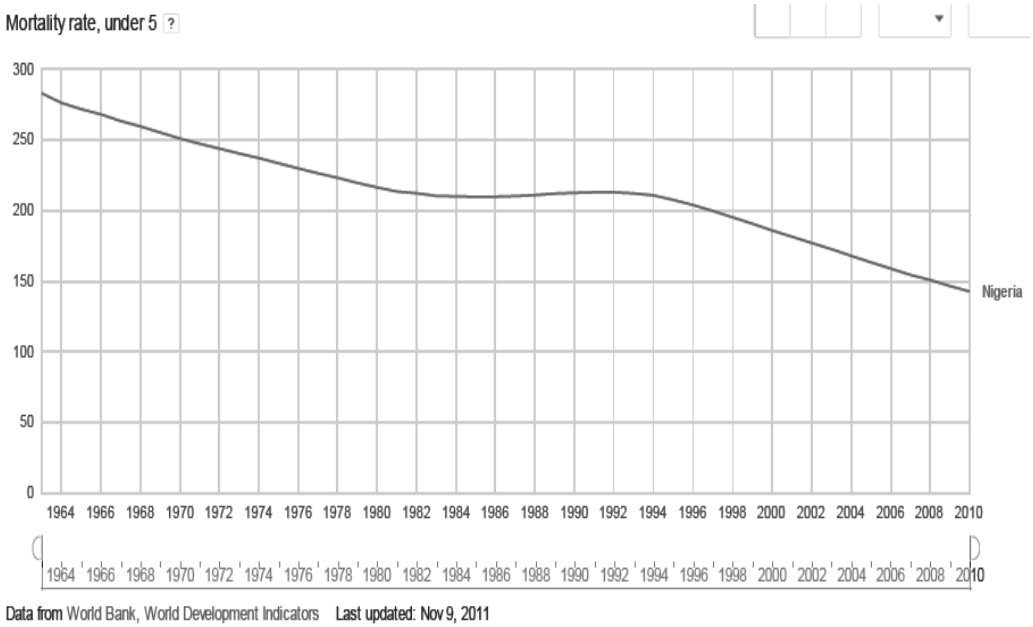


Figure 1.6: Trends in under-5 mortality in Nigeria 1960-2007 (WORLDBANK, 2012)

In addition to the biological factors, behavioural and socioeconomic risk factors for under-5 and child mortality in Nigeria have also been identified. Recent estimates suggest 34% of the inhabitants live below the poverty line, in spite of being the fifth largest exporter of petroleum products globally.

Population survey data sets have been used by researchers to identify significant and independent risk factors associated with mortality risks, and these have employed methods such as binary logistic regression and spatial geo-additive analysis (Nwogu et al., 2008, Kandala et al., 2007, Adebayo and Fahrmeir, 2005).

1.4.2 The Nigerian Health System - the Place of Paediatric Emergency Care

Paediatric emergency healthcare services in Nigeria are delivered as part of the country's public Comprehensive Primary Healthcare system (FMOH, 2006), both at national and state-funded facilities within the country's 40 states. This system

supports community recognition and the referral of acute severe illness among children to the nearest primary health centre (PHC). A PHC in turn will refer a child if necessary, to ensure that the child has access to increasing levels of specialist care which are available in secondary and tertiary centres.

Figure 1.7 indicates the key objectives of the care delivered at the three levels and depicts the upward movement of patients towards specialised care as required. Within this system, PEC services are delivered at each level, with the PHC being where first aid and locally applied global health algorithms are used to determine which children are sent onwards. At the secondary level of care, children are managed at general hospitals and comprehensive care centres unless there is an indication for tertiary level care.

The only difference between PEC delivery in the state and national administration of health facilities is in the area of patient user fees. Lagos State in particular, has abolished user fees for emergency treatment and hospital admissions (LSMOH, 2011). In contrast, all services at their point of delivery in federal facilities are billed to the parents, for either immediate cash remittance or provision of health insurance information. The latter is still fairly new in implementation, and consequently, many parents still pay for all medication and consumables used for emergency resuscitation and care.

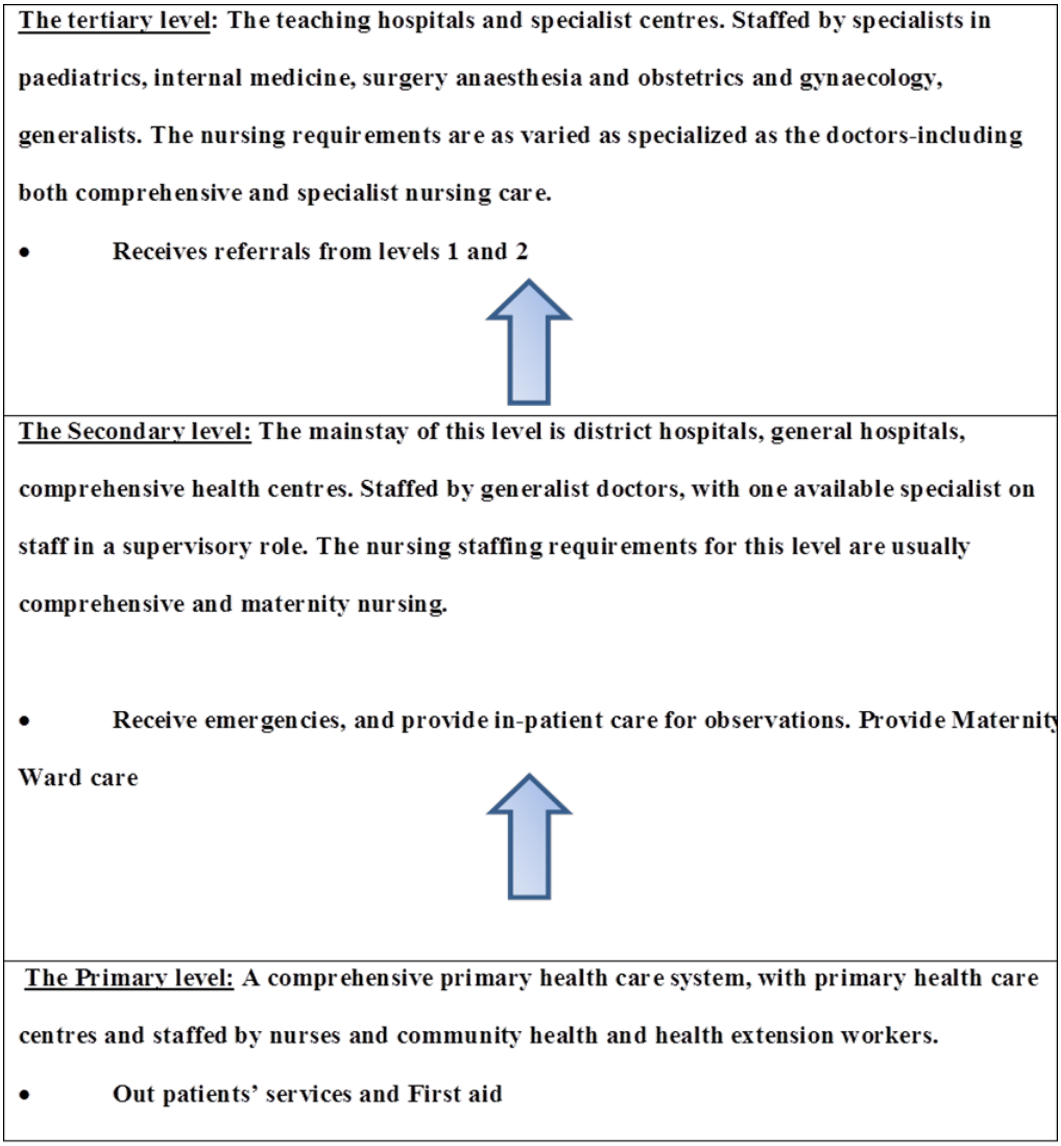


Figure 1.7: Structure of the Nigerian Health system, showing 'Upward referral'

The current policy for funding healthcare in Nigeria involves each individual becoming a member of the National Health Insurance Scheme (NHIS), which was designed towards supporting the Millennium Development Goals for Maternal and Child Health (Obinna, 2012). The NHIS was established under Act 35 1999 by the Federal Government of Nigeria (Obalum and Fiberesima, 2012), and to date, over 6000 health care providers and 62 health maintenance organisations and have been engaged under the scheme (Obalum and Fiberesima, 2012, Obinna, 2012).

The most recent revised Nigerian National Health Policy contains no independent central legislation dictating a single model for the delivery of emergency care services (FMOH, 2006). Nevertheless, any patients needing urgent care are managed to the limits of the level of care they access, regarding their immediate requirements, before being referred. At the tertiary centres, multiple specialist clinical expertise and intensivist services are available for emergency and other aspects of critical care (FMOH, 2006).

Private medical services, as available in Nigeria, consist of both formal and informal services (Alubo, 2001). The formal services include hospitals, clinics and general and specialist practices, as well as independent ambulance services with fixed places of business. The 'informal' private health providers include drug hawkers and proprietors of unlicensed pharmacies. Both of these areas of private care delivery frequently provide treatments and access to medication for individuals seeking urgent care. However, many patients unfortunately end up with substandard medications or are victims of improper prescribing practice (Alubo, 2001, Ogunbekun et al., 1999, Bate, 2008). Currently, there is no provision within the National Health Policy defining the role of private facilities regarding emergency care (FMOH, 2006).

Another important aspect of the Nigerian health system informally involved in emergency care provision is the input from practitioners of traditional medicines and practice, whose services are relatively more popular among rural populations (Offiong, 1999). The World Health Organization (WHO) defines traditional medicine as comprising

> "…therapeutic practices that have been in existence … before the development of modern scientific medicine and are still in use today without any documented evidence of adverse effects." (WHO, 2000)

Over 75% of home deliveries and simple child health emergencies in rural areas are managed by traditional birth attendants (TBA) (Itina, 1997). TBA effectiveness has been linked to a community's feelings of kinship and shared membership with these practitioners. TBAs are therefore able to exert influence among their local community population, contributing to good adherence to advice given regarding health facility attendance when needed (Hitesh, 1996, Sibley et al., 2007, Sibley et al., 2004).

1.4.3 Introducing the Immediate Context of the Study, Lagos, Nigeria

Lagos State is located in the south-western corner of Nigeria, (Figure 1.8) and is home to eight million people, an estimated 10% of the entire population of Nigeria and 36.8% of Nigeria's urban population (UN-HABITAT, 2007, LASGOV, 2011b). The current growth rate of the state is reported at 8% per annum, almost double the national rate of 4.5%. With a population density of between 4,193 persons per square km to 20,000 persons per square km, Lagos is ranked as the world's seventh-fastest growing city (CITY_MAYORS, 2012). Of the total population of Lagos, 12% of residents (almost 1 million people) are children aged less than 5 years (NATPOPCOMM, 2006).

Figure 1.8: Map of Nigeria showing Lagos in the south-west corner

The area now known as 'Lagos State' was initially settled in the mid-15th Century by the 'Awori' Yoruba tribe from the Southern Oyo kingdom (later Oyo State). In 1851, the abolition of the Trans-Atlantic Slave Trade resulted in the repatriation of many freed Yoruba captives and their descendants, who travelled through Sierra Leone in West Africa to Lagos. It is believed that these returning groups, who brought with them many practices from their previous homes in America and Europe, together with the resident Yoruba, began to form the origins of the multicultural society seen in Lagos today (LASGOV, 2011a).

Over ten different ethnic groups can be found among Lagos residents. The single largest ethnic group are the Yoruba, who are native to the region of the country and comprise 62.4% of the entire state population (NDHS, 2008). Lagos' relatively higher proportions of other ethnic groups is in clear contrast to the patterns observed in neighbouring states in Nigeria (Figure 1.9), which have hardly any other individual groups represented at levels above 10% within their populations (NDHS, 2008).

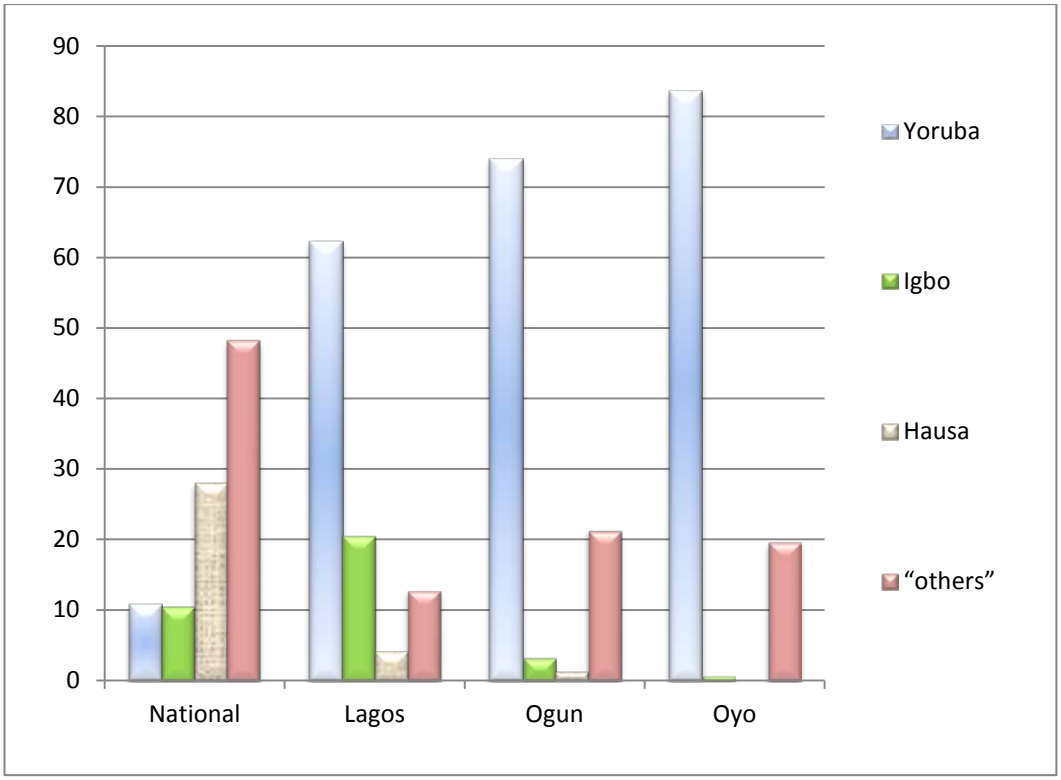


Figure 1.9: Showing relative per cent distribution of major ethnicities in Lagos, neighbouring States and nationally (NHDS, 2008).

A further source of Lagos' multi-cultural population stems from the period between 1914 and 1991, when the city was first the principal colony and Protectorate, and more recently the capital city of Nigeria. During these years, there was a pattern of constant migration involving large groups of people from other states, who came in search of work opportunities and experience in the capital city.

Lagos, within its position of cultural and political prominence within Nigeria, uniquely presents its residents with abundant employment and educational opportunities. It has been suggested that this is why the socioeconomic indices for the state, as well as levels of educational attainment are on average higher than the national average. In fact the latest DHS published prior to the completion of the study, showed Lagos respondents were among the richest respondents (NDHS, 2008).

These demographics and the historical background of Lagos State indicate that the Lagos population has an appreciable degree of ethnic and religious diversity in comparison with its immediate neighbours and the national population as a whole. The potential impact of cultural beliefs on child mortality outcomes in Nigeria is supported by evidence from Nigeria's 2004 resurgence of polio following widespread misinformation on the content of the offered vaccines (Yahya, 2007). This occurred almost exclusively in the Hausa Islamic northeast region of the country. The patterns demonstrated supported the previous literature detailing how community responses to religion can affect the uptake of health promotion with dire consequences (Obadare, 2005, Jegede, 2007).

Scheper-Hughes (1987) has described the potential impact of cultural diversity operating through the beliefs of a community on child rearing practices, of which child healthcare oriented practices are an undeniable part. This serves to emphasise the relevance within the CHER's immediate context of considering (as this study has) the proximate-determinants framework in order to understand parental/caregivers uptake of personal illness control practices, as proposed by Mosley and Chen (1984).

A primary stated goal of the current Lagos State governments' administration is to provide a health service, thereby enabling residents to 'lead socially and economically viable and productive lives...' (Jagun, 2011). The infrastructure for health within the state currently includes the presence of primary healthcare facilities in 70% of the Local Government Administrative (LGA) wards. However, the coverage of primary healthcare has continued to be less than adequate, and over a 20-year period has dropped from 54% to 33%. Problems identified with the

provision of these services have included poor personnel training and facility management (Jagun, 2011).

In 2007 the newly elected Lagos State administration pledged the provision and maintenance of free, effective healthcare curative services (LSMOH, 2011). This was directed towards the support of the national movement towards attaining the 4th Millennium Development Goal to reduce child mortality. In the four year period (2006 to 2011) following the inauguration of the current government, there was an increase in the annual budgetary allocation to health, from 7 billion to 39 billion naira (LSMOH, 2011). Figure 1.10 lists Lagos State's achievements towards achieving the child and maternal survival goals, reflecting the active political support towards the promotion and provision of essential child survival interventions and services.

There are very few published reports examining child mortality risks within the Lagos population, although an exception was the study carried out by Ojikutu (2008). Using hospital data on children from across the state, this study was able to demonstrate the significant impact of social factors, such as lower levels of maternal education (p=0.018) and lower incomes (p=0.02), on the odds of child mortality. The study also found that maternal care-seeking decisions based on cultural beliefs about illness were significantly associated with higher mortality.

- 60.7% of the recipients of free healthcare in 2010 were children aged 0-12years
- 79% of children less than age 5yrs had been immunized
- 95% increase in malaria cases treated (424,908 in 2007 – 827,219 in 2010)
- 98% of Children under one year in BCG immunization coverage
- 95% live births recorded

- Roll -Back Malaria:
  - Distribution of ACT-total of 195667 doses of ACT were distributed in 2010,
  - Integrated Vector Management (IVM) using Indoor Residual Spraying (IRS) exercises distribution of Free malaria drugs
  - Distribution of over 556,400 treated mosquito nets given Long Lasting Insecticides Treated Nets (LLIN).
  - A downward trend in new malaria cases over the year 2010-with the discernible peaks being in March and June of the year.
- Reported 91% prevalence of Exclusive Breastfeeding

Figure 1.10: Lagos State Government and Ministry of Health Indicators and Achievements for 2010

Secondary analysis of recent survey data representative of Lagos State was carried out in preparation for this study (for details see Appendix A). This analysis involved the use of binary logistic regression of 16 variables identified by the WHO and UNICEF as indicators for monitoring the progress of the 4th Millennium Development Goal, reducing under-5 mortality by two-thirds by 2015. In the univariate analysis stage the Lagos population showed similar directions of association with mortality, as indicated by Ojikutu (2008), with higher levels of educational attainment and wealth index/income placements being associated with lower mortality proportions within the dataset; however, the associations did not reach statistical significance. Following binary regression only two of these variables remained significant in their effects on mortality:

a) 'Duration of breastfeeding in months' - in favour of longer durations for better odds of survival.

b) ‘Unmet need for family planning’ - in favour of more active practice towards smaller family sizes.

When compared with the Mosley and Chen (1984) framework, it emerged that these two factors were proximate group determinants (maternal health practices) of mortality. These analyses were thus able to suggest the potential importance of maternal health-based behaviours on mortality risks among Lagos children. As also shown in Figure 1.10, one of these behaviours, exclusive breastfeeding, is already very strongly promoted within the state.

The state currently has three tertiary centres offering emergency care service access for critically unwell children: the Lagos University Teaching Hospital (LUTH); the Federal Medical Centre Ebutte Metta; and the Lagos State University Teaching Hospital (LASUTH). The study was situated at the CHER LUTH and a description of the facility is provided in the following section.

1.4.4 The CHER at the Lagos University Teaching Hospital, Lagos

Founded in 1962, LUTH was the first federal teaching hospital facility to run a designated children’s emergency facility within Lagos State. The facility is located in the Idi-Araba suburb of Mushin LGA, Lagos, and is the more centrally located of the two University affiliated tertiary emergency facilities for children in the state.

The CHER is managed by the hospital management board of the LUTH, and the College of Medicine of the University of Lagos oversees academic matters and professional medical training at the LUTH (Lesi, 2010). Staffed by paediatricians in training and nurses in training, the CHER is an active part of the tertiary facility at

LUTH (Lesi, 2010).The Hospital receives administrative funding as an annuity from the Federal Ministry of Health and the disbursement of the funding is specifically administered by the Department of Hospital Services (FMOH, 2006). Funding is through a central allocation included in the Nigerian federal health subsidy for recurrent expenditure. The costs of care to patients at this facility, although not free of charge, are subsidised. This means that the costs of care for a child are relatively lower that in the non-subsidised private hospital facilities located in the state (FMOH, 2006).

Children admitted to CHER are aged between their first day of life and their eighteenth birthday. The current building accommodates 50 in-patients via 35 expandable paediatric cots. Children usually share cots and the size of a child requiring admission is one of the main factors determining how many can be accommodated per cot. Figure 1.11 demonstrates the use of one such cot for three infants.

Figure 1.11: Three infants sharing the variable size cot spaces within CHER

The half-year CHER patient attendance for the year 2010 was 1,894. However, this has been acknowledged by the management of the LUTH as being lower than preceding years due to the industrial action which took place and resulted in lower available admission figures from September-December of that year. Preceding studies examining this population have reported up to 4, 031 for the entire year of 2008 (Fajolu and Egri-Okwaji, 2011), and this figure is similar to those of the LASUTH facility which has been recorded as admitting up to 2,004 paediatric patients in a half year period for 2007 (Oshikoya et al., 2011).

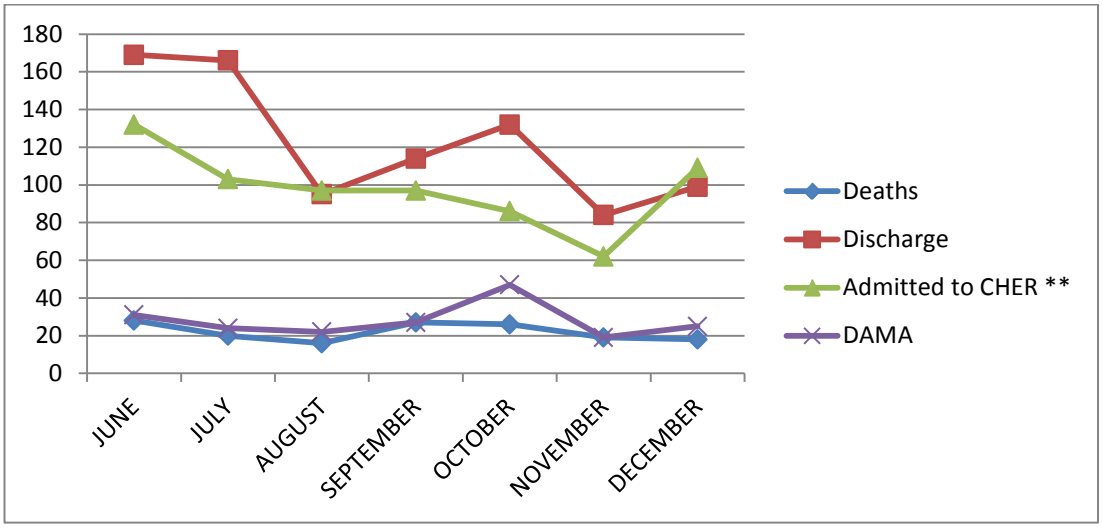


Figure 1.12: Outcome distribution over the period between June-December 2010
**Admitted CHER =larger group including a-d shown below

DAMA – discharged against medical advice

The greatest proportions of children are those discharged to their homes followed by those in a larger group designated as "Admitted to CHER". The children in this group include all those accepted into care at CHER, receiving a registration card. At the end of their first 24 hours, the children in this group are then re-classed as one of the following:

a. admitted to CHER (remained in the emergency room)

b. transferred to the care of subspecialist units,

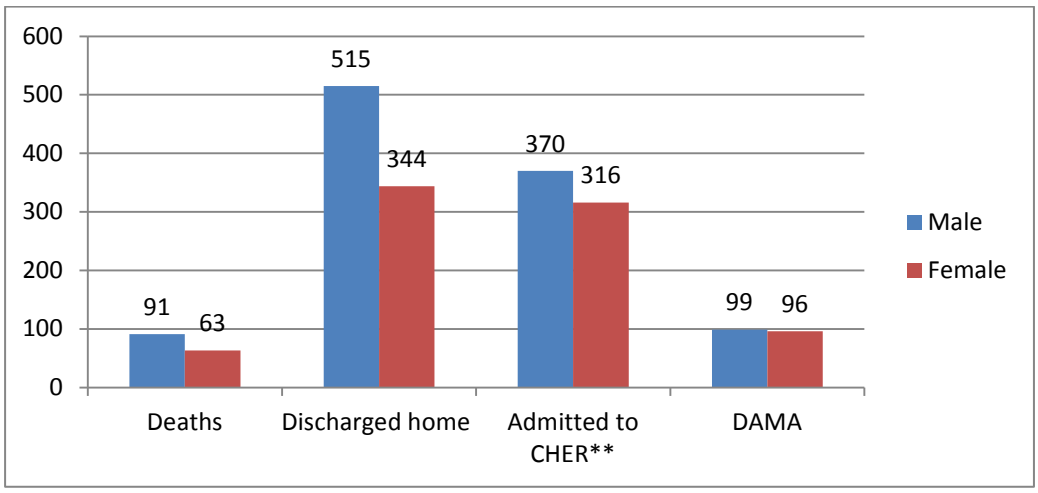
c. transferred to the wards,

d. discharged to outpatient care or

e. referred to other hospitals for follow on care.

For a more detailed breakdown of this larger groups distribution within these four sets, in comparison with those collated for this study, please see Chapter 4 section 4.2.2 Comparing the demographics among Children Attending the CHER for 2010 with the Study Sample of 99 children.

Mortality rates at CHER have been observed as 14.3% (Lesi, 2000) and 11.1% (Fajolu and Egri-Okwaji, 2011), whilst the 2010 half year mortality recorded during this study was 8.1%. The gender distribution in 2010 showed that males made up 56.8% of all patients seen in the half-year period June-December.



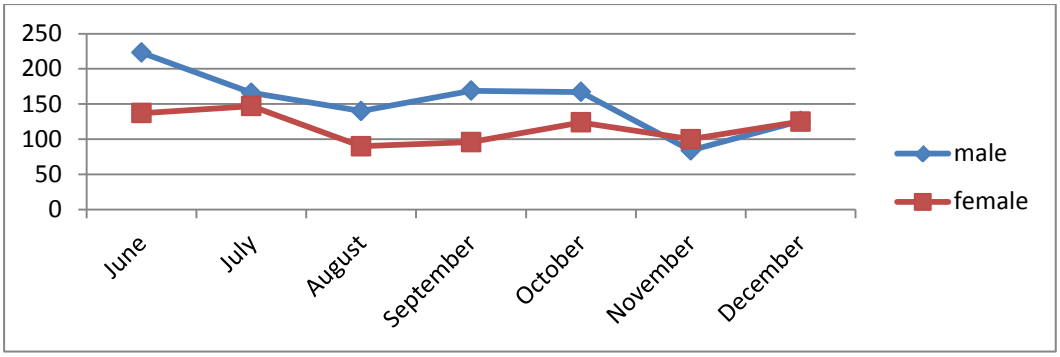


Figure 1.13: Gender distribution of children by outcome (upper) and month of presentation at CHER (lower) June-December 2010
DAMA = discharged against medical advice

Lagos Mainland and Surulere LGA are the main areas from which children usually attend the CHER (Okoro, 2010), and this was confirmed in the central nurse admissions' records for 2010 (further details are provided in Chapter 4).

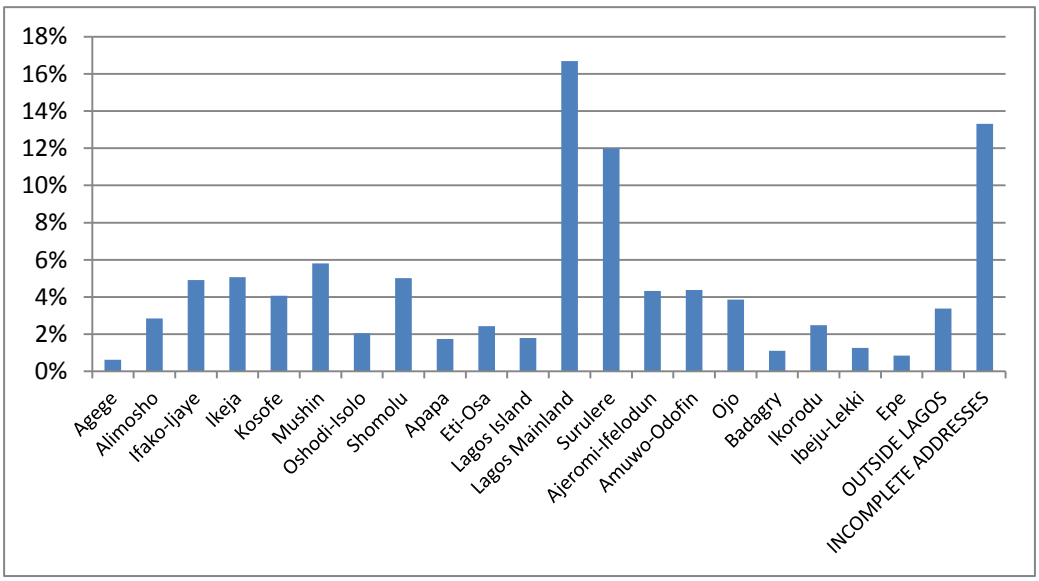


Figure 1.14: Percentage distribution of CHER patients by Local Government Area of Residence (June-December 2010)

Figure 1.14 shows that in the half year ending 2010, the commonest problem presented for care among post-neonatal children were described as 'fever to rule out malaria' and acute respiratory infections 'query cause'. Together, febrile illness and acute respiratory infection contribute to over 50% of the burden of care for children

aged over 28 days at CHER. The three neonatal conditions most frequently seen are jaundice, sepsis and severe birth asphyxia.

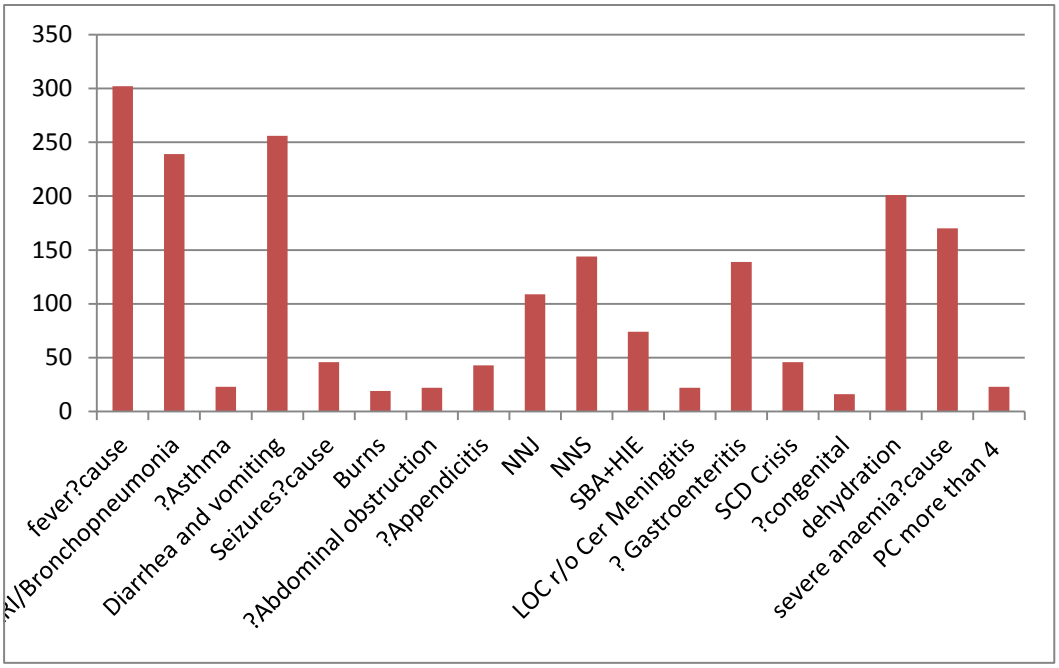


Figure 1.15: Distribution of primary presenting diagnoses June-December 2010

Attendance at CHER is not supported by centrally administered ambulance services, even though there is an ambulance available for members of staff and students of the affiliated University of Lagos, strictly for transporting them to the LUTH facility. The central ambulance service for Lagos State facilities are the Lagos State Ambulance Service, LASAMBUS (LSMOH, 2011). This exclusively provides inter-hospital transport following being called out to appropriate level LSMOH facilities, or scenes of road accident related trauma. Consequently, most (non-trauma) patients attending the CHER are either brought in using public or private means of transport, taxis and mid-size 'Danfo' buses, and prior to 2013, commercial motorcycles known locally as 'Okada'. Private hospitals may also refer and provide private ambulances, although these costs would be borne by patients' families.

Arrivals occur all through the day, with an expected drop in new case receivership only occurring after midnight (Okoro, 2010, Oshinaike, 2010).

Geographically, the CHER LUTH is the most centrally located tertiary PER in Lagos State. The location of the other university-affiliated children's emergency facility in the Ikeja LGA (LASUTH), is shown relative to LUTH in Figure 1.16. The most comprehensive state-funded facilities with a dedicated PER in the state are the secondary level Massey Children's Hospital and the tertiary level CHER at LASUTH CHER. Like the LUTH CHER, both these facilities are supported by specialist paediatricians, as well as specialist paediatric nurses (LSMOH, 2011). State-funded emergency services in the 29 general hospitals and secondary level care centres within the state were not designed to exclusively provide PEC, although the triage and admission services for acute illnesses are managed by the general paediatric consultants employed at these facilities.

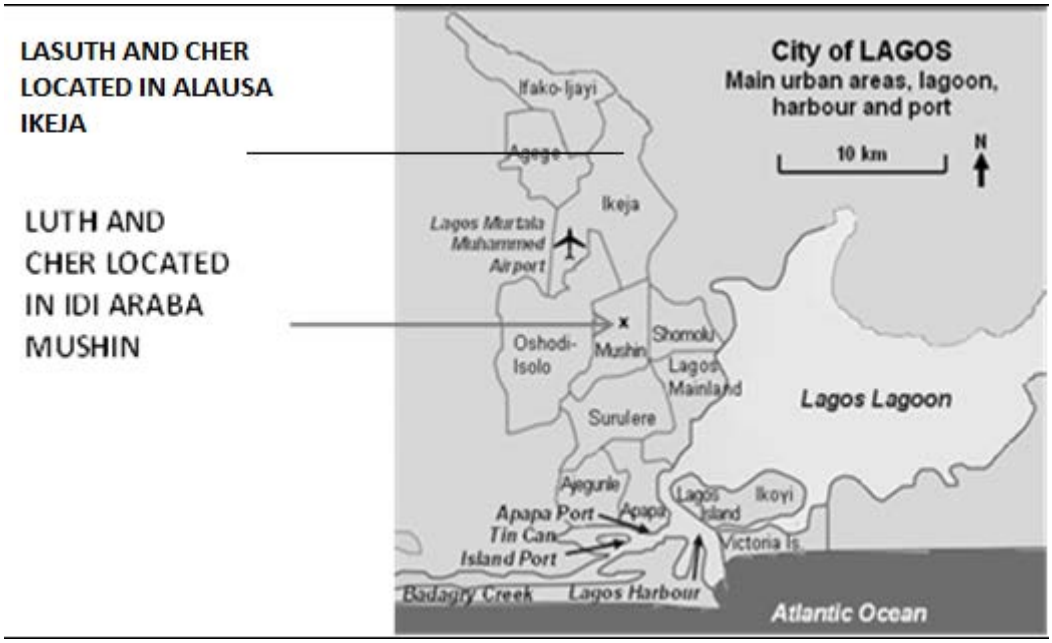


Figure 1.16: Map of Lagos showing LUTH in the centrally located Mushin Local Government Area

The functional organisation of services in CHER is governed by the facility's flexible position as a walk-in centre for emergencies, as well as a referral centre and a tertiary centre for pre- and postgraduate medical training (Lesi, 2010, Fajolu and Egri-Okwaji, 2011). The waiting area seats 20-25 adults together with the same number of children. Figure 1.17 depicts the administration set-up of CHER.

During the course of the study, the triage process for the CHER LUTH transitioned very rapidly. At the start of the study, the existing practice was fairly informal, involving senior registrars triaging patients based on the availability of consulting doctors and the perceived 'fullness' of the waiting room. On the 10th December 2010 a formal triage station was carved out of the waiting area. This station was manned by one senior-level member of the nursing staff, who was equipped with a triage tray with an Ambu-bag® and injections of diazepam and nor-epinephrine.

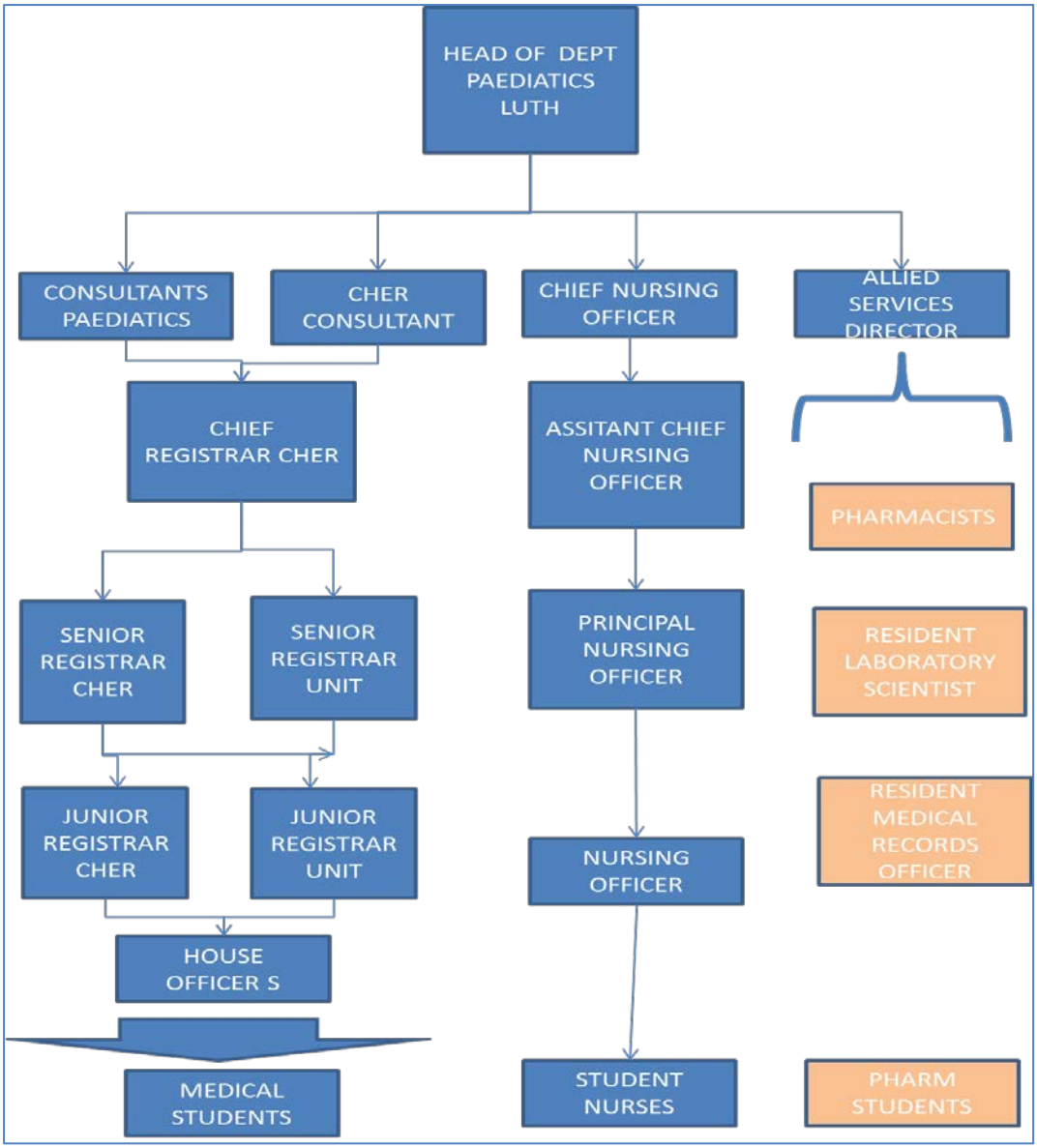


Figure 1.17: Organogram of CHER in LUTH

A comparison of the service delivery frameworks between CHER LUTH and the other children-specific emergency facilities, shows that the most noticeable difference is in the demand for care costs (Oshinaike, 2010). The cost-for-care model being operated in CHER LUTH and at other federal facilities at the time of the study had been replaced during preceding Lagos Governments by similar policies to the current cost-free model being used across Lagos State. Interestingly, at that time the

state also attempted a free care model and only shifted to a payment-based model for a short period of time between1985 and 1992.

One of the primary problems identified for CHER patients during the free care period in previous years, was the inadequate supply of essential drugs and consumables. As a result, CHER had to adapt by administering a revolving drug fund sale of these consumables (Okoro, 2010). Since that time the surrounding community of Idi-Araba has increasingly become home to the largest concentration of privately owned and operated medical support businesses, e.g. pharmacies, medical imaging and biomedical laboratories, within Lagos State.

The CHER facility and the LUTH as a whole have received a great deal of unfavourable media attention in recent years, with LUTH being referred to as a 'haven of patient mismanagement and corruption' and 'where patients come to die' (Mogaji, 2012). This, together with my stated previous experience in the setting, and the issues highlighted in Section 1.3, supported the selection of the CHER Lagos site for this study. Fortunately, the researcher was conversant with the location and processes for care, as familiarity of this sort is beneficial when qualitative fieldwork is planned (Fetterman, 2009, Hammersley and Atkinson, 2007).

1.4.5 Alternative Emergency Care Health Services for Children in Lagos

The interaction between the population and health services in developing countries is characterised by a pluralistic array of care options (Leslie, 1980, Sharkey, 2009). Although much of the literature on healthcare seeking centres on the perspective of Western style services, many communities and individual households in developing countries freely exercise their options among several types of

providers. This encompasses those outside the organised allopathic systems, to include homeopathy and traditional forms of care. Studies have established that it is quite normal for these to coexist with relatively even levels of acceptance and use in these settings (Sharkey, 2009, Han, 2002). Lagos State and Nigeria exhibit this form of pluralism with regard to the options available for PEC and the following sections highlight the main characteristics of alternative forms of PEC available in Lagos State.

1.4.5.1 Public Healthcare Services for Paediatric Emergency Care in Lagos State

The 20 local government areas in Lagos State have 274 primary care centres, which provide basic first aid and health promotional advice to the residents (LSMOH, 2011). The staff at this level include nurses and community health officers, and when the emergency care required is more advanced than can be delivered, then these centres are encouraged to refer to the secondary level centres.

The secondary level of care in the state includes the 24 facilities listed in Appendix E, and 23 of these general hospitals and secondary care centres provide emergency care for adults but do not have designated PEC facilities. The federally funded ERs of the military hospitals in Yaba and Ikoyi do not manage children exclusively but referral is encouraged if required. The Massey Street Children's Hospital is a notable exception among the Lagos-funded facilities, as this centre provides secondary level care for children, including emergencies. It functions in a similar manner to CHER LUTH and LASUTH, and is a designated post-graduate training centre. This is the oldest children's facility in the SSA region, and Massey Street handles the bulk of emergencies on site, with only the cases requiring

unavailable services or a multi-specialist input being transferred 'upwards' (LSMOH, 2011). The only Lagos State managed tertiary facility is the 741-bed LASUTH facility, described in part above.

1.4.5.2 Private Hospital-Based Paediatric Emergency Care in Lagos

Private hospitals in Lagos State form a notable proportion of the health services available for children (Alubo, 2001). There currently exist 265 registered facilities in the state, all of which are licensed and monitored by the Lagos State Ministry for Health. As is common in many developing countries, formal interactions between public and private health institutions are limited (Ogunbekun et al., 1999); even the referral process is relatively informal from these facilities to public services, usually but not always, predicated by the non-availability of required services in the latter (Ogunbekun et al., 1999). The limitations of the available care for children in these facilities are not publicly available, and when this information is collated, it is frequently incomplete. Indeed the provision of individual facilities' services appears arbitrary, and for the most part dependent on a facility's ability to retain consultant staff in named specialties on either a permanent or case-by-case basis.

Where ambulances are owned by these hospitals, then they are most frequently seen pressed into service for the rapid transport of patients to public centres of tertiary care, such as LUTH and LASUTH. Odusanya and Babafem, (2004) have reported that private hospital-based care seeking in adults contributes to delays in definitive care. Whilst Alubo (2001) has emphasised the problems facing private care in Nigeria as a whole, identifying tensions between the rising care costs and low standards of care, which undermines the viability of this option against cheaper, but

admittedly flawed, public care. This supports anecdotal information that private facilities charge exorbitant fees for all their services, including PEC (Okoro, 2010). However, the published literature describing PEC in private services in Lagos is extremely limited, and at the time of submission of this thesis, no such literature is available through MEDLINE, EMBASE, CINAHL or ASSIA.

1.4.5.3 Emergency consultations with Local Chemists

Lagos, like many parts of the developing world, has many pharmacies and chemist shops sub-serving the populace by selling medications (Bate, 2008). The degree to which these facilities are registered, and/or regulated, is highly variable. However, there is evidence that they constitute the first source of treatment for common ailments in these contexts. Indeed the use of pharmacies and local chemist shops as the first source of treatment for febrile illnesses in children was shown to be 41.3% nationally and 19.6% in Lagos State by those responding to the 2008 Demographic and Health Survey (DHS) (NDHS, 2008). The pattern for use during diarrheal illnesses again reflected lower levels in Lagos, with 33.5% of mothers admitting to their use nationally and no responses from Lagos residents.

1.4.5.4 Traditionalist Care for Children in Lagos State

The use of traditional care practitioners in Lagos State is comparatively lower than that observed nationally. The 2008 DHS for Nigeria showed that 1.6% and 2.7% of mothers, respectively, admitted to having first sought care from traditional practitioners for febrile and diarrheal illness in their children, the Lagos State sample did not report any such usage. Oreagba et al. (2011) showed that 66.8% of respondents in a sample from Lagos State, admitted to using ‘herbal’ medications. The use of these medications for acute illness, although admittedly supported by

little evidence of effect, was found to be supported in principle by 78.4% of relatives. Awodele et al. (2012) also found that 62% of medical practitioners in a tertiary facility in Lagos State agreed that the use of traditional medicine had a role in healthcare, but felt the level of development in this field was too rudimentary at that time, and as such, almost 40% would not recommend it to their patients. Thus, the under-reporting of the DHS sample should not encourage a discounting of the importance of this option for Lagosians, and as such the possibility within the current study was considered for exploration.

1.4.5.5 What Happens at Home before Healthcare Seeking Behaviour?

The pre-hospital practices of using remedies procured from orthodox or traditional medicine providers within the Lagos context have been seen to result in the inappropriate usage of medications (Oshikoya et al., 2007). The commonality of the practice in developing countries has been identified as a potential point of delay in seeking care (Tipping and Segall, 1995); however, the details of the practices vary across settings and is discussed in in Chapter 2.

1.5 Overview of the Thesis Chapters

This thesis is organised in five chapters; it presents introductory and background material ahead of the analysis, results, discussions and conclusions of the empirical work conducted. Each chapter is prefaced with an introduction and concludes with a summary.

Chapter 2 is a review of the available published literature describing PEC outcomes and their associated risk factors. This chapter helps demonstrate the

methodological limitations in the existing literature, which helped direct the design of this current study.

Chapter 3 outlines the reasoning behind the chosen approach for this research, specifically, the justification of the selection of the case study design. The chapter outlines the research methods selected and their applications during the research.

Chapter 4 presents the findings of the study, which include an evaluative description of the analysis of the empirical qualitative data, as well as a description of the ER's admission and outcome demographics. The analytic strategy used was pattern matching, which compared emerging propositions, (from the triangulation of empirical data sources), against existing conceptual patterns. This comparison helped indicate the factors which have been demonstrably influential on children's outcomes in CHER, and traces the outlines of the contemporary process in CHER during this study.

Finally, Chapter 5 discusses the findings in view of the existing literature and reveals the underlying mechanism linking the identified factors to outcomes from the empirical evidence. The chapter then goes on to compare the empirical profile of the findings with the wider frameworks guiding this research, towards forming the conclusions of this study. The chapter concludes with recommendations for social change, the development of policy, theory and practice.

1.6 Chapter Summary

For over 30 years, medical professionals working in PEC in SSA have been aware of the high level of mortality among their patients. Prior to this study, individual studies had successfully quantified the proportions of deaths within PEC and highlighted potential risk factors. However, to date, they have lacked detailed descriptions of those factors involved in the PEC process, previously identified as influencing the outcomes.

This case study set out to identify those factors within a named facility using the experiences of key individuals within the pathway of care centred on children receiving care up to the end of their first 24 hours in care. The study expresses the value of a social constructivist ontology, and makes the argument for the relative importance of different (groups of) factors identifiable within the experiential data. The final interpretations emerged from building detailed descriptions of factors influencing outcomes using a pattern-matching strategy guided by conceptual frameworks for child health outcomes in PEC. The conceptual linkages were relevant to the PEC process for the purposes of the study.

This chapter has introduced the research problem of the study and the relevant components of the PEC context in the natural setting. It has also described the study's primary design as a social constructivist case study, and stated the limitations encountered during the conduct of the research. The following chapter provides a review of the existing literature which served to focus the direction of this current research.

Chapter 2: Child Deaths in Paediatric Emergency Care: A Review of the Literature from Developing Countries

2.1 Introduction

This thesis seeks to identify the factors which influence patient outcomes at 24 hours following presentation at the CHER Lagos. The research approach involves an exploration of the experiences of children admitted to PEC at this facility using case study methodology. In order to do this, it is expedient to establish the position of the existing literature regarding the types of factors involved in the causation of PEC outcomes. Such an exploration is also essential for determining the extent to which the existing research methodologies have been applied towards this aim, thus establishing the direction and potential value of this current research to the field of study within paediatric Emergency Medicine research.

The next section of this chapter introduces the emergence of the discipline of paediatric Emergency Medicine as relevant within the context of developing countries. The chapter illustrates the use of limited resources in providing appropriate PEC in such countries using two principal interventions in its implementation within developing countries. This section concludes with a critique of the on-going debate on the suitability of components of PEC for the developing world context.

Section 2.3 describes the relevant conceptual frameworks for this research, which details the multifactorial nature of child survival/mortality risks. This section allows

a simultaneous appreciation of the embedded placement of the chronological PEC pathway, leading as it does to the pathway-specific forms of the survival/mortality outcome(s). This section concludes with an examination of the social and anthropological literature on care seeking behaviour in developing countries.

Section 2.4 presents a systematic appraisal of the existing research literature based on hospital PER-based populations in developing countries. These studies were selected because they directly reported on potentially causal factors measured within PER populations, as well as the outcomes of PEC recorded in different individual PER. From this review, the prevailing forms of methodology examining PER in these countries, as well as their limitations were identified.

The material presented in Section 2.5 is a discussion of the systematic review's findings reflecting on the identified factors and their roles in child survival outcomes against evidence in the wider literature from developing countries. This provides direct support for the selection and design of the current research's methodological approach towards a better understanding of factors influencing PEC outcomes in the selected context, the CHER of LUTH in Lagos (Section 2.6).

2.2 An Introduction to Paediatric Emergency Care

2.2.1 A historical overview of the evolution of paediatric emergency medicine

The term 'paediatric emergency care' (PEC as used in this study) is often used to describe the initial service(s) provided on arrival to hospital for children with acute, potentially reversible, clinical conditions (Baker, 2009a, Baker, 2009b). In principle, these services form only part of the sequence of care needed by these children,

serving as a bridge between any first-aid delivered in the community and the final care provided following arrival at hospital (Baker, 2009a, Kissoon and Goldman, 2007). Paediatric Emergency Medicine is the broader term used to describe the academic and clinical discipline informing the practice and organisation of the care provided within an emergency health service for children.

Paediatric Emergency Medicine represents a comparatively new area of sub-specialist clinical medicine. The parent field of Emergency Medicine (EM) itself only emerged as a distinct speciality separate to general medicine in North America and Northern Europe in the mid-1960s (Alagappan et al., 2007, Anderson et al., 2006). It was at this time that it began to emerge that there was a dire need for the provision of separate, holistic, pre-hospital and early in-hospital care among both the population and clinical specialists in these countries (Anderson et al., 2006). Up until then, patient outcomes following admission to hospital-based care for acute illness or trauma were often widely variable, and frequently complicated by uneven levels of service quality and staffing expertise for emergency services across different facilities (Anderson et al., 2006).

The need for drastic changes in this area of health services became a part of the wider public health consciousness in the US following the publication of a commissioned National Research Council report in 1971 (CFECUSHS, 2007). This report named accident-related-deaths as ‘The neglected disease of modern society’ (NRC_CTS, 1971), and began by stating that ‘Accidents are the leading cause of death among persons between the ages of 1-37; they are the fourth leading cause of death at all ages.’

In response to the public outcry in the US following the publication of the contents of the report, the US Congress promulgated the Emergency Medical Services Systems (USEMSS) Act of 1973. This legislation provided much-needed political support for the commissioning of over 300 trauma and emergency care facilities nationwide over following years (CFECUSHS, 2007).

In the 40 years since the USEMSS Act, the training and practice of emergency clinical specialties have been adopted as vital components of health systems across the industrialised world (Sinclair, 2005, Mintegi et al., 2008). This development has steadily progressed following the recognition of the need for separate training and practice in ER focused care, and has led to the establishment of national academic societies and organisations dedicated to developing the discipline of EM. These organisations serve to ensure the continued development and delivery of standardised training leading to the certification of EM specialists (Alagappan et al., 2007, Arnold, 1999), 1999).

The growth of the specialty has resulted in the seamless integration of EM services into the 'vertical' systems in self-subsistent hospital organisation models in most industrialised nations (Anderson et al., 2006). This defines the dual functions of hospital-based emergency care as both an entry point to in-patient care, as well as a publicly accessible service for those patients temporarily needing urgent care (Arnold, 1999, Anderson et al., 2006).

The expansion of the EM discipline almost immediately led to widespread concurrent interest from other sub-specialities, notably paediatric specialists desirous of incorporating the principles of EM into their unique practice niche. In their evaluation of existing global programmes for emergency and critical care, Mock et

al. (2009) reiterated that injured children could not be considered as merely small injured adults. In particular, key ethical issues related to seeking emergency care delivery relevant to children involved:

a) The absence of decision-making autonomy of a child
b) The decision-making capacity of the caretaker/parent

(Cahill and Papageorgiou, 2007)

As such, the care delivery needed to be tailored towards constantly acknowledging that care should be delivered with allowance for the unique demands of a triadic caregiver-child-clinician interaction.

Within two years of the EMSS Act in the US, the first paediatric trauma unit was inaugurated in the State of Maryland, which was closely followed by the first physician-led paediatric intensive care unit at the Children's Hospital of Pennsylvania (CFECUSHS, 2007).

2.2.1.1 Addressing Paediatric Emergencies in Developing Countries - IMCI

Efforts towards the provision of dedicated paediatric emergency services in industrialised countries soon encouraged both the WHO and UNICEF to implement and begin supporting the effective provision of emergency paediatric services in developing countries (World_Bank, 1995, Razzak and Kellermann, 2002). Thus far, the focus of developing country health systems had been on preventive, promotive, community-based health delivery (Razzak and Kellermann, 2002, WHO/UNICEF, 1978). These primarily preventive models of care focused on ensuring the identification of child health needs in the community and encouraged wide-scale engagement with the existing promotion programmes and interventions. An example

of one such currently active intervention is the Integrated Management of Childhood Illnesses (IMCI) (Gove, 1997).

The IMCI was designed as a means to simplify the first stages of care following the onset of illness. In order to allow the least educated in developing country rural communities to easily engage with standardised processes for entering formal care pathways. An algorithm-led programme, IMCI used, among other readily available materials, easily labelled pictograms promoted within community-care education models to inform and encourage members of the community to actively seek out signs of acute illness or injury among children. Especially emphasised were common signs, for example fever in geographic zones where this served as potential warning of severe endemic infections such as malaria.

IMCI was developed in 1992 by UNICEF and the WHO with the aim of prevention or the early detection and treatment of leading childhood killers, towards expediting children's transfer to health facilities (Gove, 1997). Within IMCI, the referral process maximises the use of appropriate measures available at each subsequent level of care (primary, secondary and tertiary) (Gove, 1997, Razzak and Kellermann, 2002). The programme focus is on the improvement of both family and community practices for the home management of illness, as well as on case management skills of health workers within the available health systems.

However, IMCI was often operated and promoted within the existing primary healthcare framework in many of these countries, which resulted in varying its impact across both regions and globally. Indeed, the effectiveness of the programme has been found to be mitigated by social and cultural attitudes regarding the signs and the illnesses they represent. Although the sensitivity of the algorithms was found

to compare well with paediatrician assessments for signs of malaria, pneumonia, anaemia, measles and signs of malnutrition independently on the pre-existing cultural understanding of illness, and disease within different contexts (Gove, 1997, Kalter et al., 1997a, Kalter et al., 1997b, Weber et al., 1997, Perkins et al., 1997).

Independent studies conducting post-intervention evaluations of different IMCI-supported communities in SSA, found evidence of care-seeking behaviour very different to advised practice. In practice, local interpretations and actions were preferably implemented by parents (Hill et al., 2003, Ringsted et al., 2006). Such a community-based level of PEC represents one of the better-understood strata, due to the existing wide base of research conducted examining outcomes across populations.

The bulk of post-community first aid and emergency treatment was borne by the primary and secondary care facilities, with the local referral policy governing referred access to tertiary facilities. However, the available components of care remain relatively rudimentary, with available services frequently limited by the local policy governing the financing of the healthcare system (Kobusingye et al., 2005, Argent et al., 2009, Kissoon et al., 2011).

Secondary and tertiary facility-based PEC is the mainstay of the practice in industrialised nations. However, in less developed countries this portion of care, even though initially designed to mirror the same level of facilities as in the industrialised world, is also subject to the economic, organisational and manpower limitations which plague these health systems (Gamatie et al., 1994, Kobusingye et al., 2005). This is even more unfortunate as the children who eventually present for care at these facilities have doubtless overcome great obstacles in order to reach it,

only to be at an increased risk of dying within a few hours of presenting for care (Molyneux, 2001, Aikhionbare et al., 1989).

The most commonly used emergency care delivery models, as reported in the global EM literature principally differ in the placement of triage services. The nomenclature of such models reflects the original locations in which they were developed (these are shown in Figure 2.1)

Rainer (2000) has described as the "Neglect model", the prevailing model of care which exists by default in developing countries, especially where the systems for emergency care delivery do not, as yet, receive support from legislation. Within these countries, the population is provided with prudently positioned available services and practices. This lack of structure constitutes evidence of how much basic infrastructural development is still needed by these PEC systems (Bruijns and Wallis, 2011a, Bruijns and Wallis, 2011b).

a) European model: triage is pre-Hospital; patient transported to a definitive facility after stabilization and resuscitation are completed.
b) The Anglo-American model: depends strongly on the in-hospital triage, placement of physician specialists and equipment
c) Neglect model: variable, no legislative organizational support; ad hoc

Figure 2.1: Global models of care
Source: Rainer, 2000, Arnold and Holliman, 2005

The WHO and World Bank currently advocate as a guiding principle the delivery of cost-effective 'limited care'. This initiative encourages the development and use of local technologies in low resource environments, whilst acknowledging the limitations of the socioeconomic and political environments (Razzak and Kellermann, 2002, World_Bank, 1995). Examples include integrating interventions

such as the IMCI with hospital organisational programmes and the ETAT protocol. This programme directly addresses IMCI's focus on case management for severe illnesses in these contexts.

2.2.1.2 Addressing Paediatric Emergencies in Developing Countries - ETAT

ETAT training was developed as a part of the WHO's IMCI strategy (Kobusingye et al., 2005), and was designed in response to research investigating the poor levels of triage and early patient management and poor patient outcomes in developing hospitals at first-level referral hospitals (Nolan et al., 2001). The emerging evidence identified the importance of organised triage towards timely and adequate patient management, and highlighted the potential for better patient outcomes as a result.

ETAT consists of training courses delivered over between 3 and 5 days, and encourages clinicians to categorise children into one of three groups based upon their need for resuscitation, P1 P2 and P3 as shown in Figure 2.2 (Molyneux et al., 2006, Molyneux, 2009). ETAT has been validated in various developing country contexts, including Brazil (Tamburlini et al., 1999), Malawi (Robertson and Molyneux, 2001, Molyneux et al., 2006). The intervention compared well with Advanced Paediatric Life Support (APLS) training among clinicians for accurate, timely identification of signs of severity, and greatly aiding decision-making.

The added advantage of ETAT is that it takes into consideration resource limitations, the unique epidemiology of paediatric illness in developing countries and the higher rates of mortality (Gray and Maclennan, 2008). ETAT practitioners are sensitised to consider clinical signs that are contextually of concern and present the need for appropriate levels of caution in classing patients for care.

P1. Emergency signs — immediate attention required	
Airway	
Breathing	
Circulation	
Coma	
Convulsions- Confusion	
Dehydration	
P2. Priority signs — to be seen as soon as possible (front of the queue)	
3 Ts	Temperature
	Trauma
	Tiny (<2 months of age)
3 Ps	Pallor
	Pain
	Poisoning
3 Rs	Respiratory distress
	Restless
	Referred (urgent)
MOB	Malnutrition
	Oedema
	Burns
P3. All others can be seen in time-of-arrival sequence	

Figure 2.2: The ETAT schedule (Robertson and Molyneux, 2001)

Gray and Maclennan (2008) when evaluating the literature on ETAT validation research identified some residual issues which need to be addressed prior to building an implementation framework for ETAT in each individual setting. The reviewes literature was unable to provide a standardised correlation of improvements in assessment as this depended on the delivery and proficiency (acquired from APLS and other pre-ETAT training) of staff in the baseline capabilities.

A universal problem identified following ETAT implementation was the difficulty in interpreting the true impact of the intervention on patient outcomes (Gray and MacLennan, 2008). This had been previously reported by Robertson and Molyneux(2001) in their earlier study in Malawi evaluating the application of the

protocol. The review by Gray and MacLennan(2008) further corroborates the earlier findings of Robertson and Molyneux(2001) which suggest that it has proved easier to demonstrate the effect of protocol changes on the improvement in services. Truly, any effect on outcomes could only be extrapolated following a descriptive analysis of outcome patterns and trends. This was due to a dearth of analyses examining the attendant changes in the facilities themselves, such as demands on attendant services or changes in resource requirements which were adjusted due to ETAT.

Both Robertson and Molyneux(2001) and later Gray and MacLennan(2008) identified additional issues clearly able to confound the effect on patient outcomes, which were not taken into consideration in these validation evaluations. These included: differences in individual staff mix-experience in setting, culture, and training levels; and how staff practice was individually impacted by the intervention. A key limitation to appreciating the potential impact for ETAT in their centre, mentioned in the earlier work by Robertson and Molyneaux(2001) was the dearth of adequately trained staff, in the face of the new triage system. This supports the recommendation of Gray and Maclennan (2008) that prior to implementing ETAT it is essential to tackle the problem of how the application of the intervention might be affected by the resulting bias in the clinical assessment, where this is skewed by factors such as training and experience. Thus, in order to facilitate future implementations an evaluation analysis of proposed sites should address collating more in-depth evidence on the organisational and social factors in each setting. This issue was considered particularly relevant within the planning stages of this thesis, as it raised the potential significance of the findings towards providing the detailed descriptions needed concerning the relevant factors.

2.2.2 Supporting the Continued Development of Paediatric Emergency Care in Developing Countries – the Debates For and Against

It has been argued that less developed countries and those countries with a high U5MR may not necessarily benefit from the blanket integration of PEC as a distinct practice into their existing health system (Kissoon et al., 2011). The proponents of such arguments specifically debate whether:

a. The current evidence suggests that efforts towards developing emergency medical care systems positively affect the desired outcomes (Anthony, 2011).
b. The use of emergency modalities, such as a continuous positive airway pressure among populations with U5MR above 30/100,000 live births, is cost effective (Kissoon et al., 2011).
c. The demarcation of limited resources into the segmented delivery of specialist services is beneficial for the healthcare systems of these countries (Kissoon et al., 2011, Anthony, 2011).

There has been convincing data from South America (Arreola-Risa et al., 2000), the Caribbean (Ali et al., 1993) and the SSA region (Mock et al., 1998) of how these services have improved measures of morbidity and emergency related mortality. The identified improvements included simple, standardised protocols, and the provision of basic care infrastructures along the PEC pathways, producing improvements across very different geo-political zones and models of health systems (Anthony, 2011).

Kissoon et al. (2011) in evaluating the state of this debate highlighted concerns regarding the delegation of available finances towards expensive or comparatively high tech treatment modalities, for example, equipment for maintaining continuous positive airway pressure. From examining the relatively high costs per unit for use of such equipment, it was determined that any impact of such modalities on reducing overall mortality would be insignificant (Kissoon et al., 2011). These concerns are buoyed by debates concerning the appropriateness of prescribed care plans for children in these countries, and the high costs of incorporating the vital equipment and training requirements, such as for triage, medical transport and advanced resuscitation support (Kobusingye et al., 2005). Hauswald and Yeoh (1997) provided a strong argument against such resource diversion with their evaluation of the relative cost of a rudimentary ambulance service in Kuala Lumpur, estimated at US$2.5 million annually. This service was projected as only having the potential for saving less than 10 lives, over half of whom would suffer attending significant neurological morbidity.

However, counter-arguments suggest that a focus on population mortality thresholds is a distraction. Instead, a re-focussing on the expectations of the targets for emergency care among these populations is advocated (Razzak and Kellermann, 2002, Argent et al., 2009). It is believed that this will encourage greater interest in adapting locally appropriate technologies within PEC, thus fostering an emerging field of research aimed at discovering and testing such technologies (Razzak and Kellermann, 2002, Argent et al., 2009). Furthermore, Cho et al. (2005) advocated the importance of isolating and identifying the specific requirements within a medical system, and not blindly applying ‘tested’ models, rather augmenting what is already available.

The stages of evolution towards the fully integrated academic/clinical speciality status of paediatric Emergency Medicine in most parts of the industrialised world include primary, secondary and tertiary stages. The primary development stage advocates the strengthening of academic and clinical training specifically in paediatric Emergency Medicine. The secondary stage is a natural evolution, where the administrative infrastructure for supporting the continued delivery of training and the emerging service and equipment requirements, is actively developed. Finally, the stage of tertiary development occurs when the growing infrastructure demands changes in legislation and whole-systems policy (Bruijns and Wallis, 2011b, Mulligan, 2011).

It is true that, in the face of financial and infrastructural resource restrictions in developing countries, fostering the continued development of the discipline and practice of EM as a whole, and paediatric Emergency Medicine in particular, presents a daunting task (Mulligan, 2011). Admittedly, such undertakings must be assessed for their suitability for context prior to implementation within an individual country and regional health system (Bruijns and Wallis, 2011a; Bruijns and Wallis, 2011b). Paediatric Emergency Medicine in most SSA health systems is in the earliest stages of development. Some countries have initiated advanced tertiary facilities positioned to provide PEC services, whilst others have PEC delivered at different levels across the health system, in regulated models fostered by an actively placed referral system. Most countries operate systems somewhere in between these two models.

Any progress within individual health systems towards advances in paediatric Emergency Medicine can be enhanced through first identifying, and then addressing, areas of challenge in service delivery. However, this will not be successful in the

absence of development of the discipline through training and centralised support for the infrastructure required. In other words, there is a need for such development to be supported so PEC delivery processes can begin to look far less 'neglected'. This study's aims reflect how the research conducted here is poised to contribute to the debate, following the identification of the influencing factors in CHER Lagos.

2.3 Conceptual Frameworks Explaining Child Survival Outcome Causation in Developing Populations within the Context of Paediatric Emergency Care

The potential risks for children following the onset of acute child illnesses depends almost entirely on the correct timing of the delivery of PEC services (COPEM, 2007). The types of survival outcomes identified within hospital-based PEC include the end-results of care. The odds of mortality and survival in a given population of children have been considered as existing along a continuous spectrum mitigated by identified risk factors over time (Mosley and Chen, 1984). This spectrum can be appreciated within the process of receiving care in hospital, where all the processes and routines are geared towards mitigating any trend towards mortality.

Children at the end of a set period of care are commonly designated an outcome label relative to the objectives of that portion of available care, here PEC delivered at a specific facility, based upon the appropriate institutional response to their current clinical status. For example, advancement through an ER to intensive care is based on concerns about a worsening prognosis, meaning that a child is designated as 'transferred to ICU', whereas advancement through treatment based on improving their prognosis could result in a child being 'discharged home' or 'discharged to

out-patient based care'. While the prognostic bases of such progress may be decided on a case by case basis, progression towards the needed levels of intervention is desirable from a patient management perspective. As such, for the purposes of this study the outcomes were broadly grouped as undesirable and desirable outcomes.

The undesirable outcomes for PEC were those which disrupted the progress of a child through to final rehabilitation at home based on the Kissoon and Goldman (2007) cascade. These outcomes, beyond which there was no option for change of status or continuation of care, were:

1. Death
2. Discharge against medical advice (DAMA) - describes the voluntary action taken by a patient or caregiver following a decision to withdraw from receiving a defined course of clinical management (Brook et al., 2006). This decision is usually with the knowledge of the medical team and is confirmed by written documentation of the patient's intent by the doctor and is endorsed by the patient in order to indemnify the institution of liability as a result of this decision. Without this legal process and agreement the patient would be considered if they were to leave the facility to have simply 'absconded' or 'eloped' from care (Brook et al., 2006).

The desirable outcomes included:

1. Transfer-focused outcomes largely based on the available levels of onward care and specialised support at each facility. On the whole, these include transfers for:
    a. In-patient care on specialist unit wards
    b. Intensive Care wards/units
    c. Referral to higher tier care, e.g. secondary to tertiary level care.

2. Discharge-focused outcomes - where the facility terminates the need for the emergency admission and is confident in releasing the patient for home based rehabilitation, with or without follow-up attendance at outpatient facilities.

In the introductory chapter the joint consideration of three distinct yet complementary theoretical frameworks was presented as the guiding conceptual premise for understanding the potentially complexly interacting factors which could be implicated in the outcomes of PEC. These were considered of great importance within developing country populations, where even the sub-population of hospital attendees faced increased risks of mortality and other less desirable outcomes. This section describes in greater detail the theoretical contributions of the models considered earlier and streamlines them, identifying common elements which then guided the conduct of this study.

2.3.1 Mosley and Chen: Distal and Proximate Determinants of Risk - the Survival-Death Spectrum

From the discovery of the direct effects of biological and environmental causes of disease, the global shifts in epidemiological patterns has shown a demonstrable divide with respect to the access of populations to effective interventions. Omran (1971) presented the theory of epidemiological shift, wherein the developed and more industrialised populations face a reduced risk of mortality from preventable causes such as infectious diseases. Subsequently, regions of the world co-exist in variable stages of mortality causation patterns, with the least developed populations

retaining low life expectancies, and being ravaged by acute and preventable causes of death.

The confluence of world politics within the twentieth century witnessed a global movement towards harmonising targets for health and a rise in the public health focus. The Alma Ata Conference of 1979 represented just such a forward thrust by the global community towards neutralising the sustained effects of communicable disease among different populations (WHO/UNICEF, 1978). The promotion of health service engagement at the primary care level was advocated, to ensure the earliest access to effective, appropriate, and available technologies, and as such immunisation was promoted towards prevention of acute diseases of the respiratory and gastrointestinal tracts, the primary causes of death in two-thirds of the world population at that time (WHO/UNICEF, 1978).

However, following low rates of success, despite of the effectiveness of the interventions, the global public health community began to acknowledge the background role of socioeconomic and sociocultural factors (or indeed determinants) in the success of the placement of such interventions. The model presented by Henry Mosley and Lincoln Chen in 1984 (Figure 1.3) notably took into consideration what they termed as the ‘distal’ impact of socioeconomic features of the target populations on household-centred behaviour and practices. This underpinned the valuable principles espoused by the earlier work of authors such as Bronfenbrenner and Engel, who expounded the social interactions which produced parenting and child care behaviours (Bronfenbrenner, 1979, Engel, 1977).

The framework proposed by Mosely and Chen (1984) invited researchers to consider individual specific disease states as indicators of the operation of a series of

biological proximate determinants within a context defined by distal socioeconomic variables, rather than as the direct 'causes' of the final outcomes. Additionally, they considered that the outcomes of these interactions should not be viewed as a single dichotomous end point-mortality or otherwise. Rather, this framework presented a range of outcomes cycling between growth faltering through ill health and mortality; thus allowing the incorporation of a time-based continuous component to the framework.

The distal determinant groups as proposed by the authors included:

1. Individual
2. Household
3. Community

These groups all included socio-political and socioeconomic features unique to each of these levels of societal stratification, such as existing government policy concerned with public health and safety, as well as cultural norms which dictate how a particular population responds to childhood ill-health and disease (Mosley and Chen, 1984).

Building on the suppositions by Mosley and Chen, Millard (1994) and Arroyo et al. (1988) further teased out the intermediary roles of individual communities due to their semi-independent social, cultural and political roles, relative to regional government institutions. Arroyo and colleagues specifically emphasised the importance of applying such explanatory models and expressed a similar appreciation of the importance of determining the levels at which the socioeconomic and political determinants for health services exist in target populations.

By focusing on the existence of wider community and household levels of socioeconomic determinants, Mosley and Chen (1984) had suggested that the distally placed socioeconomic factors within a population were inexorably linked and operated through a series of key proximate determinants in order to modify the risk of mortality or survival in children in developing countries. Although establishing the key roles of environmental and biological determinants, the Mosley and Chen model emphasised the engagement with health services 'personal injury control' as a crucial nexus within the distal-proximate interactions.

2.3.2 Kissoon and Goldman: Entering the Paediatric Emergency Care Cascade and Outcomes

The point of engagement for PEC thus represents the point of continuation of the public health models mentioned in the preceding section towards understanding the attending processes at the origin of the model described by Kissoon and Goldman (2007), as described in Chapter 1 (Figure 1.4). As stated previously, the requirement for urgent care following acute illness begins in the community's social capacity for appreciating illness and progresses through the evolved care-seeking behaviour along the PEC pathway, towards the available care for the specific population

Children's lives in their home environments present the origins for the examination of an instance of acute illness leading into the PEC pathway. As identified by Mosley and Chen (1984), the environmental and biological determinants maintain the balance of successful injury or illness control. In this model the child is seen as living in a tenuous balance of normal health with the risk of exposure to agents of ill-health. In principle, therefore, the initiation of the emergency care pathway is dependent on the viability of the preventive measures

within a population (Kissoon and Goldman, 2007). Thus, if prevention fails a child is at an increased risk due to their susceptibility to exposure, thereby entering into a synergistic cycle of risks for ill health and death (Mosley and Chen, 1984, van Norren et al., 1986). This is especially relevant among populations in developing country who are still experiencing high mortality due to preventable conditions, e.g. malnutrition and infection (Mosley and Chen, 1984, van Norren et al., 1986).

2.3.3 A Critique of Existing Healthcare Seeking Models: Discovering a Suitable Framework for this Research

The extensive literature on health-seeking research shows that it is important to make the distinction between whether the focus of each individual study is on understanding the process leading to the decision-making and the search for improved or sustained health, or the selection and utilisation of the PER facility (Tipping and Segall, 1995, MacKian, 2003). It is common for studies focussing on the utilisation of health services to begin their examination of a health seeking encounter from the point at which a family/caregiver/household has decided upon a particular healthcare service. Such studies are usually limited in their examination by focusing almost exclusively on the facility, institutional features and outcomes. These are frequently characterised by being focused on the attending population at a public sector facility, and as such, are useful in planning and policy (Tipping and Segall, 1995, MacKian, 2003).

The other form of health seeking research is concerned with the pre-utilisation portion of healthcare seeking and focuses on how the behaviour propelling a patient into care is determined. This form of research asks questions such as:

f. How do family/caregiver/communities respond to illness
g. Why these groups select particular services
h. When and why there is a revision of decisions to selected services from the pluralistic array within a particular context

The questions raised by the desire to understand the behavioural aspect of HCSB provide a broad view of the social context which influences the decisions and their resulting actions. The importance of considering the social context here supports the earlier consideration of the domains within the Bronfenbrenner model (Figure 1.2) as relevant to understanding the PEC process as part of the wider social reality. The relevant social context incorporates:

1. The physical location of a household
2. The relative availability of alternative services - public and private services, traditional healers
3. The finances available for treatment - socioeconomic determinants, reflecting Mosley and Chen (1984)
4. Existing perceptions of service quality
5. Perceptions of cultural and religious propriety (Hausmann-Muela et al., 2003, Tipping and Segall, 1995).

A great many HCSB models have been designed within the literature to evaluate both domains, allowing a detailed consideration of the factors in play within a defined health problem with some involvement with the definable parameters of utilisation. An example of a pre-existing behavioural model which presents domains within the social context and the decision-making process initiating HCSB is the health belief model (Abraham and Sheeran, 2005). This model's precepts include

components of the pre-existing interest in health and perception of the barriers/benefits of existing health options. The perception of susceptibility to illness is balanced by concerns regarding the severity of the symptoms experienced. These beliefs and motivations are produced by social and psychological determinants within the social experiences of the caregiver and/or the patient. Following on from these, the onset of acute illness triggers the response of the individual to existing cues and results in identifiable action towards defined care.

One of the best-established HCSB models which focusses on HCSB utilisation, is the socio-behavioural model (Andersen, 1995). This model depends strongly on the placement of components in a 'logic sequence'. As such, the factors are described respectively as predisposing, enabling and need factors. This type of model, although containing similar features, such as demographics (predisposing), financial resources (enabling) and perception of severity (need), places the emphasis on a perceived linearity of the relationships leading towards a singular point of evaluation: how they produce engagement with the available services (Hausmann-Muela et al., 2003). The predisposition domain mirrors some of the concerns of the behaviour-focused models but with a narrowed focus on how they affect treatment selection.

There exists a form of conceptualisation, which places an emphasis within HCSB on the pivotal roles of specific groups of individuals and the decision-making process within a pathway model (Hausmann-Muela et al., 2003). These identified driving forces and dynamic models or pathways help outline the courses of specific illnesses, or forms of therapy, following the decision-making, and frequently offer endpoints, either prior to or at the end of defined periods of care.

By evaluating the types of model identified here it can be seen that the domains of the Mosley and Chen model present an opportunity to explore the determinants of behaviour and actions regarding childhood illness in developing countries. The determinants provide some pointers as to who the parent/caregiver will begin engagement with regarding the need to enter the HCSB pathway, but less concerning the decisions regarding facility selection. Additional consideration of the emergency care pathway model of Kissoon and Goldman, focuses on the dynamism of the urgent cascade of events towards PEC specifically. This journey, tailored by the specificity of the needs of children in a context defined by the problem (in a named PER), receives its strongest impetus from the breakdown of prevention and the perception of severity. The relevance of both these models to the defined population of interest, as defined in the research question, resulted in their selection rather than the more generic HCSB models.

Researchers have been known to adapt or refit models and their key domains to address the peculiarities of their research (Hausmann-Muela et al., 2003). This form of re-modelling offers much beyond the spurious theoretical label of ‘new’ models, and presents opportunities, even through the fusion of multiple models, for expanding the range of key factors for consideration in exploratory research designs (Hausmann-Muela et al., 2003). It was for this reason that for this study a ‘super-framework’, an amalgamation of the Bronfenbrenner, Mosley and Chen and Kissoon models (Figure 2.3), was preferred as it provided the most detailed composition of the potential explanatory factors of outcomes of children receiving PEC in the CHER in Lagos. Thus, Bronfenbrenner provided summary explanations of family and community interconnectedness for health, Mosley and Chen presented an exposition of the causality of distal and proximate determinants of the odds of child

mortality/survival, while the dynamic PEC pathway represented by Kissoon and Goldman depicted the PEC entering events and the end point outcome.

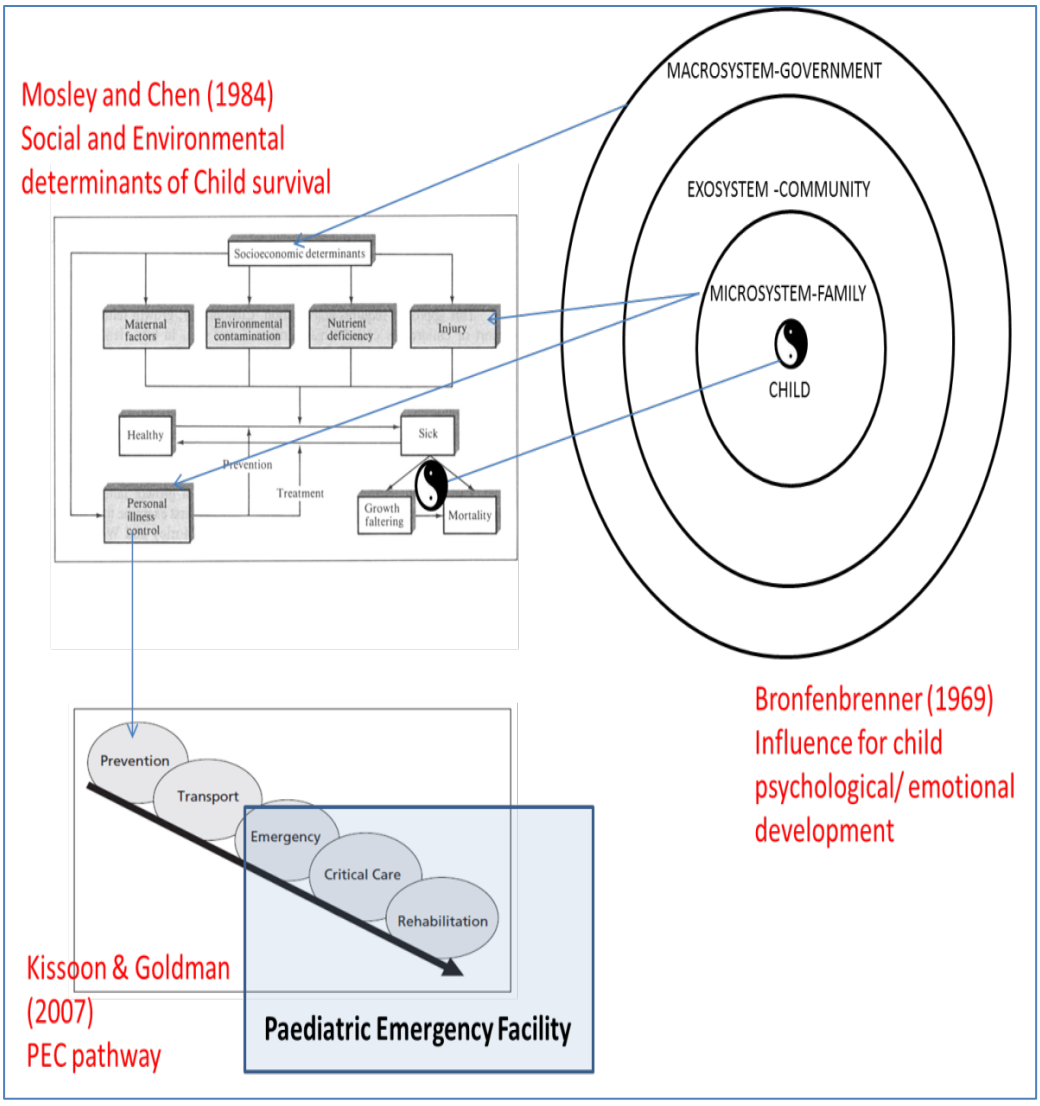


Figure 2.3: The super framework employed in this study

Thus, this super framework is able to represent:

a. An existing dual layer of prevention from illness (Mosley and Chen and Bronfenbrenner)

   Distal determinants → Social/Cultural/ Economic determinants → stratified by level of influence: government, community and family level factors.

   Proximate determinants: parental caregiver, personal illness control, environmental, nutrition and injury status

b. The primary impetus into the cascade is the breakdown of prevention, leading to illness recognition and the PER seeking cascade, which defines progress within the selected facility among professional caregivers to a desirable survival outcome, rehabilitation at home.

c. The child and all these interactions and dynamic processes remain embedded in the social spheres determining behaviours and decisions made by all key caregivers.

These components therefore allow an appreciation of both the predisposing features of the patient/child and those of the care seeking process qualifying the form of PEC sought. The principal critiques of previous HCSB models has been their split focus on one domain or the other, behaviour versus utilisation (Hausmann-Muela et al., 2003). This super-framework is well positioned to help overcome this through the flexibility of the domains to include social context and components of decisions, as well as barriers within the utilised health service, here PEC.

Admittedly limited by the research question to utilisation by an attending population at a named facility, this model nevertheless possess flexibility enabling the decision to select a particular form(s) of PEC to be better explored from the

vantage point afforded by the details from the domains exploring the predisposing features of the caregiver's decision making, all through the process.

2.3.4 Care/Health-Seeking Behaviour in the Sociocultural Context of the Study

As stated by Stacey (1988, p.142):

> 'Ordinary people develop explanatory theories to account for their material, social and bodily circumstances…in developing them they draw on all sorts of knowledge and wisdom, some of it derived from their own experience, some of it handed on by word of mouth.'

The perception of the existing state of health among a group of individuals is socially determined, and cultural norms influence the perception of health values, expectations and lifestyles (Pillay, 1993). The prevailing beliefs regarding health as a whole in African traditional societies thus have their own unique regional and sub-regional expressions. Relevant to this current study, the sociological patterns related to SSA cultures are described here.

Despite many centuries of Western influence, decisions concerning health in most African societies still strongly rely on traditional concepts. As a result, many parents in this context make their care-seeking decisions using a parallel acceptance of value for both the Western and traditional worldviews (Haverkort et al., 2002). African models of illness place the origin of illness within one or more categories, ranging from belief in protection and prevention of illness by sustaining ancestral relationships, or directly using methods locally considered as sorcery (Pillay, 1993). In the same context the coexisting lay beliefs reflect some engagement with Western

healthcare provision. Certain signs are associated with specific illnesses, especially those with known traditional cures, e.g. the ‘dongonyaro’ herb (*Azadirachta indica*) for treating fevers in northern Nigeria. However, where the supposed causes of a fever are inaccurate, then this failed recognition results in a delayed entry into the PEC pathway.

An early review of the anthropological literature on care seeking in Africa reveals a dichotomy between the strategies employed for care seeking among diseases considered either supernatural/magical and physical/empirical (Kroeger, 1983). Thus, where better-understood conditions, such as infectious disease, were often treated using modern medications, self-treatment and attendance for traditional care was reserved for musculoskeletal, psychiatric and haematological conditions. These different decisions were determined to be a result of a community’s varying understanding of the causes of different disease states.

Medical anthropology proffers the acceptance of cultural definitions of illness as these frequently go beyond labels to include descriptions of symptoms, preventive measures and suspected causative factors (Csordas and Kleinman, 1996). For example, the cultural descriptions of fevers in the Yoruba language ‘*iba*’ constitutes a description of the chills, rigors and overall malaise; however, further qualification of whether or not a patient has an attending loss of appetite: ‘*iba onje ko wun je*’ creates a more specific idea of the condition, and may result in treatment being more specific (Olanihun, 2011).

Data from different ethnic groupings across the SSA region have shown that the observed differences in risks for mortality, across different cultural ethnic groups are in fact closely linked to economic inequality and differential use of child health

services by these groups. Indeed the examined ethnic affiliations demonstrate that economic advantages are the most strongly manifested as affecting child survival at the household level (Brockerhoff and Hewett, 2000, Gyimah, 2006)

A more recent study focussing on Nigeria has also identified the importance of the values placed on childhood illness among all ethnic groups at the household level. The different socio-cultural beliefs and the resulting child care practices were found to be significantly influenced by the mother's household environment and socioeconomic variables, especially maternal education (Fayehun and Omololu, 2013).

Further examination of the literature showed that it is common among most African societies in response to the signs of illness to 'tell' their immediate communities about their illness (Pillay, 1993). From this, the decision-making process frequently becomes a collective effort. This community involvement has been found to allow for the placement of interventions which assist key members of these communities in recognising 'dangerous' clinical signs and in encouraging timely parental engagement with healthcare services.

2.4 A Systematic Review of Factors Associated with the Outcomes of Paediatric Emergency Care in Developing Countries

This systematic review was designed to identify the existing literature concerning any social, clinical or economic factors reported as being associated with mortality and other relevant survival outcomes in emergency care facilities in developing countries. The review was positioned in this thesis specifically to highlight the important factors associated with the reported outcomes of PEC. It is expected that

this will provide a better understanding of the limitations of the existing research approaches to the outcomes in PEC. The question driving the review was therefore:

> *What social, clinical, and institutional factors have been reported as being associated with the outcomes of paediatric emergency care, among children in developing countries?*

The objectives were:

a) To search for and select eligible primary research studies describing outcomes of emergency-room/department care for children in developing countries.
b) To conduct a quality assessment of retrievable eligible studies.
c) To examine these studies for factors linked with the mortality outcome (and any relevant others) of care in these populations.

2.4.1 The Search Strategy

An initial search was carried out prior to the review in order to identify any pre-existing reviews of the literature that examined the causation of outcomes for PEC. The electronic databases searched included the Cochrane Register of Reviews, the Database of Abstracts of Reviews of Effects (DARE) and the Applied Social Sciences Index and Abstracts Index (ASSIAI). This search did not yield any such reviews; however, it served to re-emphasise some of the work by authors in SSA that highlighted the potential risks for children within the first 24 hours in PEC in that region (Molyneux, 2001, Wammanda and Ali, 2004).

The main search was carried out using six electronic databases on OVID® SP platform listed below in Figure 2.4 and the period of time covered by this search was

January 1973 - December 2010. The OVID ®SP platform was selected due to the access it provides to the key medical databases and its capacity for multiple and cross-database searches. This facilitated easy management of all the search lists produced, minimising the need for searches in multiple formats. It also presented more economical storage options as the lists generated were directly exportable as a single library to the bibliographic software ENDNOTE X5®.

Correspondence with the primary authors of some of the studies highlighted in the initial search allowed enquiries to be made about relevant, on-going, or unpublished work (Molyneux, 2010). The resulting dialogue served as the source of some interesting supplementary information used in other portions of this research. However, no 'grey' literature was thus identified.

1. Full text journals from OVID
2. Books on OVID
3. AMED (Allied and Complementary Medicine) 1985 to November 2010
4. CAB Abstracts 1973 to 2010 Week 43
5. OVID MEDLINE(R) 1950 to November Week 1 2010
6. EMBASE Classic+ EMBASE 1947 to 2010 Week 44

Figure 2.4: Showing electronic databases searched on the OVID® SP platform

The definitive electronic database search was conducted using Boolean combinations of the defined search terms. Designing the search terms involved practical applications of the elements of the research question. These elements include the participants, interventions, comparators and outcomes (PICO) of the research question (Petticrew and Roberts, 2006) as shown in Table 2.1. This process

was supported by consultation with Warwick Medical School's Biomedical Librarian and Information Specialist.

Manual searches were also performed using the reference lists of some of the key articles which had been identified while identifying challenges along the emergency care pathway as described in earlier sections of this chapter; however, this process did not reveal any articles which were not eventually identified by the electronic process. The full details of the Boolean strategy, including the readout from the electronic search can be found in Appendix B (section 1).

Table 2.1: PICO elements in the question for this systematic review

Participants	**Intervention**	**Comparators**	**Outcome**
Children (28 days to 18 years) in developing countries receiving emergency care	Admission to emergency care	N/A	Mortality Others: Survival Discharge against advice Transfer to further care

2.4.2 Determining the Inclusion and Exclusion Criteria

The elements of the research question identified above were incorporated into the phrasing and components of the inclusion and exclusion criteria, which are summarised in Figure 2.5.

Inclusion criteria: Studies reporting on

1. **Children living in developing countries within the age group aged over 28 days** and **up to 18 years.**
2. **Children admitted to a hospital-based emergency facility situated within a developing country.**
3. **Children admitted for acute or acute onset clinical conditions or trauma.**
4. **At least one primary patient-centred outcome of morbidity or mortality occurring after the emergency care was received.**

Exclusion Criteria: Studies

1. **Describing medical facilities which are functionally defined as providing intensive care.**
2. **Focussing solely on neonates - children aged between 0-28 days of life**
3. **Reporting on children originally from developing countries** but **receiving care in developed countries.**
4. **Describing outcomes of emergency care within** a **temporary emergency facility in a** d**eveloping country; for example foreign combat/emergency facilities.**

Figure 2.5 Inclusion and Exclusion Criteria for the Systematic Review

2.4.2.1 Studies Meeting the Inclusion Criteria

The studies included were allowed to be of any empirical research design providing the population was as described above. The following designs could therefore be included: cross sectional, cohort studies, case-control studies, and trial designs. This fairly broad remit was permitted within the review due to the dearth of studies identified during the initial scoping searches with a stated primary objective of examining risk factors among in-hospital paediatric emergency populations.

Within the included studies the facilities representing emergency care needed for this review, were clearly designated as 'ERs/departments/units'. Studies reporting the outcomes among children in general emergency facilities were also included

provided the data describing the required parameters for the population outcomes were available.

Studies were based on PER populations in any of 144 countries designated as low income and lower-middle income, formerly collectively described as ‘developing’ by the World Bank Classification in 2009 (World_Bank, 2010).

2.4.2.2 Studies Meeting the Exclusion Criteria

Studies where the primary population were aged less than 28 days or designated as neonates were excluded. Neonatal deaths comprise over 40% of the overall child mortality globally, and the majority of these deaths are directly attributable to peri-natal and obstetric mortality risk factors, complications of preterm delivery, breathing problems associated with delivery (birth asphyxia), blood infections (sepsis) and pneumonias (Lawn et al., 2005, Oestergaard et al., 2011). As these factors largely are generally very different from the conditions encountered in general paediatric emergency care, it was believed that including such publications on these neonatal emergencies would potentially mask the significance of the emerging factors, which would be relevant to the outcomes among the wider range of age-groups of post-neonatal children (Black et al., 2010, Lawn et al., 2005, Bhakoo et al., 1989).

This review excluded all non-English language studies. This decision was made as a pragmatic choice due to the number of these studies that became evident at the abstract-selection stage during a multiple-reviewer selection process, which will be described in more detail later.

Studies reporting on child residents of developing countries receiving PEC in countries other than developing countries were excluded in order to prevent consideration of non-eligible care processes.

Studies where the primary emergency admission involved facilities designated as being 'intensive care unit(s)', confirmed as being separate from an emergency department/room/unit were also excluded. Intensive care typically comprises of a post-ER stage of care involving the use of advanced life support equipment. These studies were excluded to preclude the potential within such work to over-emphasise the effects on outcomes of the quality of the facilities' equipment and specialised services.

2.4.3 Selection of Eligible Studies

2.4.3.1 Electronic Filter for the Exclusion of Non-Relevant Studies

Electronic searches used in systematic reviewing are often overly sensitive and over-inclusive. Although carefully designed, search strategies can produce lengthy lists of potentially eligible studies, which is often due to the presence of key words within irrelevant domains of the complete citation reference (Reviews and Dissemination, 2009).

In order to make the retrieval of studies more precise, key word groupings were combined using the SMART GROUPS function of the ENDNOTE® X4 software. This meant that only articles which had a combination of key words in both their abstract and titles were considered for inclusion. This process was validated using a random sample of 25 of the excluded studies, none of which were considered eligible

for inclusion. This set of articles can be found in an ex-bibliographic table in Appendix B (section 2).

2.4.3.2 Quality Control of Study Selection

This stage of the review involved the input of the researcher and two independent reviewers selecting the eligible articles for inclusion. This process was conducted using two sets of samples of titles, abstracts and full text for each reviewer to apply the inclusion and exclusion criteria.

The Kappa statistic, which corrects the probability of titles being selected by chance, was employed to measure inter-reviewer agreement for the titles, abstracts and full titles (Higgins et al., 2008). Full details and results of this process are available in Appendix B (section 3) and threshold values are provided in Table 2.2 (Higgins et al., 2008). Following initial adjustments to the phrasing and content of the criteria, all three stages of selection reflected a minimum of 'very good' agreement between the two reviewers, as shown in Table 2.3.

Table 2.2: Thresholds for Kappa coefficient based inter-reviewer agreement

Threshold values for assessing quality of agreement	
Fair agreement-	40% -50%
Good agreement	60%-79%
Excellent agreement	Over 75%

Table 2.3: Observed levels of inter-reviewer agreement

Stage of study selection	**Percentage agreement between Reviewer 1 and each co-reviewer**
(Preliminary) Titles	34% and 41%,
Titles	74% and 87%
Abstracts	78% and 74%.
Full texts	83%

2.4.3.3 Data Extraction and Management

A new data extraction form was designed expressly for this review. The purpose of this form was to facilitate the easy management of the relevant data from each of the eligible studies. Each completed form also served as an annotated summary of the study. Quality appraisal and synthesis could therefore be carried out using the form database which was stored in a Microsoft Excel© spreadsheet, without requiring a re-consultation of the original sources (Petticrew and Roberts, 2006, SCIE, 2006). The piloting procedure and final design of this form are provided in Appendix B (section 4).

2.4.3.4 Analysis of Included Studies

Narrative synthesis was the principle means of summarising and analysing the included studies. This method of synthesis has been proven to be beneficial in studies such as this where study heterogeneity precludes the production of meaningful interpretation following statistical combination (Booth et al., 2011). Here, the heterogeneity was due to the widely different populations and widely ranging analytical objectives represented by the eligible studies.

Each of the included studies was appraised for methodological quality, a process facilitated through use of the design-specific checklists of the Critical Appraisal Skills Programme (CASP) (CASP, 2010a, CASP, 2010b). The CASP instruments were mentioned as being among 14 of the best instruments for assessing the quality of studies being included in a systematic review (Deeks et al., 2003). This was because the items used in these checklists are able to accurately draw out evidence of the internal validity of the individual studies. More recently, Sanderson et al. (2007) concurred with the opinion of Deeks et al. (2003), further highlighting how this

instrument facilitates users' appreciation of different forms of bias. Areas specifically mentioned as assessable using this instrument include variables measures and control for confounding factors.

The studies included in the review were assessed for theirs strengths and limitations of asserted associations among named groups of factors with patient mortality and any other salient outcomes. The quality appraisal process also retained an appreciation for the intrinsic value of the study regarding its own aims. This aggregative approach, inclusively reporting contributions from all eligible studies (Booth et al., 2011), permitted a balanced overview of the included literature.

An additional advantage of using this approach to examine the literature was the ease with which categories of information regarding the risk factor associations could then emerge. Summaries of the studies were then categorised according to mortality and any other outcomes. This helped identify the factors which had been either measured or mentioned as potentially influencing the odds of the mortality outcome. Some studies reported more than one single outcome, and these were carefully examined to confirm the nature of the association of these outcomes with the identified factors.

Once the narrative synthesis process yielded categories identifying factors influencing the outcomes of PEC, it became clear that additional literature would be needed to more strongly reflect each of the highlighted factors' relevance to PEC outcome causation. As such, a supplementary search was conducted using each category as a key word in the electronic databases used above. This search was for the best available evidence on these factors and their impact in the context of

developing countries. The details of this supplementary search informed the discussion in Section 2.5.

2.4.4 Results

2.4.4.1 Description of Included Studies from Primary Search

Forty-six studies were eventually deemed suitable for inclusion in the review and their designs were as follows: forty cross-sectional studies, five cohort studies and one randomised controlled trial. The flowchart depicted in Figure 2.6 illustrates how these studies were selected following the electronic search and multiple reviewer selection of studies. Table 2.4 lists the 46 articles and their study designs, while Table 2.5 summarises the broad groups of risk factors and subcategories highlighted in the review, for their roles in mortality. Table 2.6 focuses exclusively on the bio-chemical and clinical indicators, which were found to be significantly, associated with PEC mortality risks.

Although all of these studies reported on at least one primary outcome of PEC, there were only three in which the primary aims were directed at identifying factors specifically associated with the mortality outcome (Duarte et al., 2005, Wammanda and Ali, 2004, Maitland et al., 2006). Overall, the quality of the included studies was acceptable for the purposes of this review. This was because most of these studies fulfilled their aims and did not set out to evaluate the impact of the factors they reported on mortality. As such, the aggregated information was able to identify recurrently raised issues of importance linked with the mortality outcome among these populations, and even some correlational evaluations of associations with mortality. However, the reviewed literature methodologies were unable to establish causality of the highlighted risk factors. This limitation is to be expected from cross-

sectional designs, which were the predominant study design evaluated here. A summary table showing the quality appraisals is available in full in Appendix B.

2.4.4.2 Identified Outcomes of Paediatric Emergency Care Across these Studies

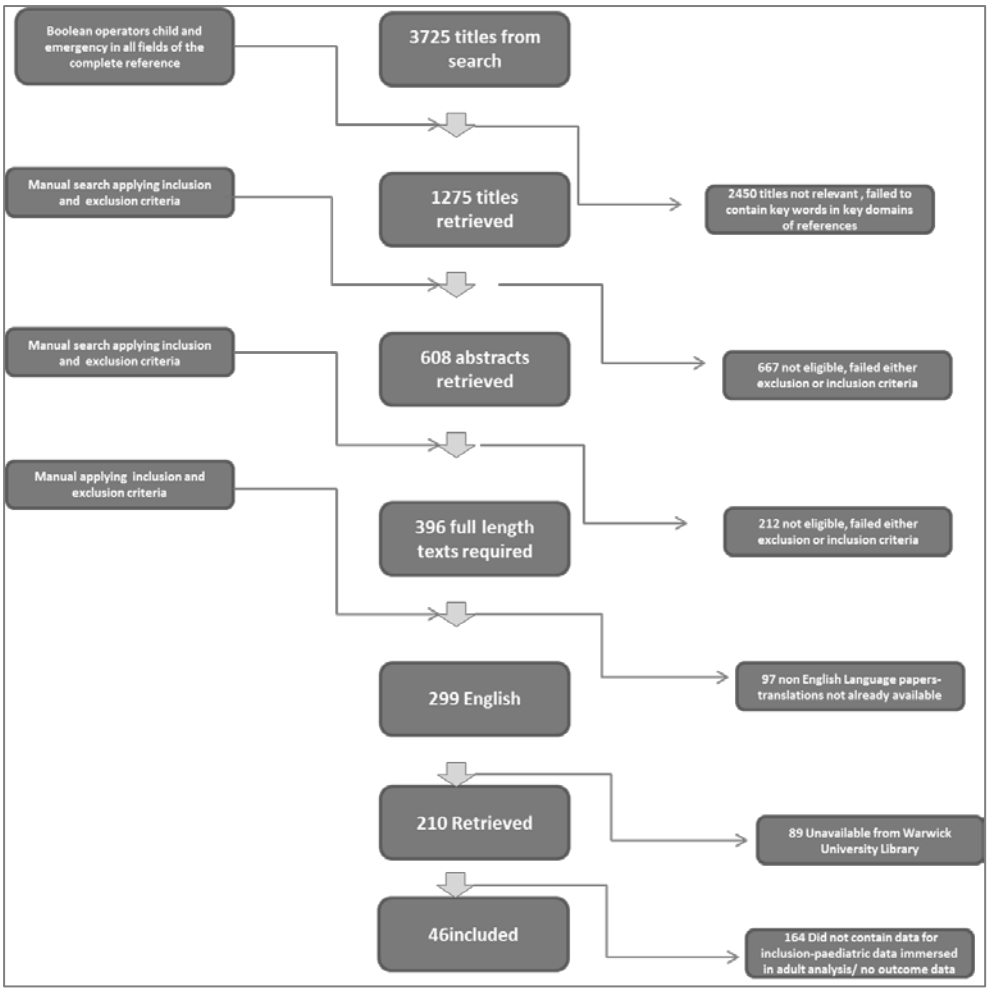


Figure 2.6 Flowchart showing how studies were selected for inclusion in the systematic review

Table 2.4: The 46 studies included in the review

	AUTHOR(S)	YEAR OF PUBLICATION	TITLE OF THE STUDY	STUDY DESIGN
1.	F. A. Abantanga, B. Nimako and M. Amoah	2009	The range of abdominal surgical emergencies in children older than 1 year at the komfo anokye teaching hospital, kumasi, Ghana	Cross-Sectional
2.	M. Abdurrahman	1983	Why our children die: a study of mortality pattern in an emergency paediatric unit in Kaduna, Nigeria	Cross-Sectional
3.	O. Adejuyigbe, A. O. Aderounmu and K. A. Adelusola	1992	Abdominal injuries in Nigerian children	Cross-Sectional
4.	A. R. K. Adesunkanmi, L. Oginni, A. Oyelami and O. Badru	1998	Epidemiology of childhood injury	Cross-Sectional
5.	S. Ahmad, J. C. Ellis, H. Kamwendo and E. M. Molyneux	2010	Impact of HIV infection and exposure on survival in critically ill children who attend a paediatric emergency department in a resource-constrained setting	Cohort
6.	H. A. Aikhionbare, A. M. Yakubu and A. M. Naida	1989	Mortality pattern in the Emergency Paediatric Unit of Ahmadu Bello University Teaching Hospital, Zaria, Nigeria	Cross-Sectional
7.	I. A. Angyo, S. D. Pam and R. Szlachetka	1996	Clinical pattern and outcome in children with acute severe falciparum malaria at Jos University Teaching Hospital, Nigeria	Cross-Sectional
8.	D. Antia-Obong	1992	Paediatrics emergencies in Calabar	Cross-Sectional
9.	O. Ayoola, A. Orimadegun, A. Akinsola and K. Osinusi	2005	A five-year review of childhood mortality at the University College Hospital, Ibadan	Cross-Sectional
10.	E. A. Bamgboye and J. B. Familusi	1990	Mortality pattern at a children's emergency ward, University College Hospital, Ibadan, Nigeria	Cross-Sectional
11.	M. Bosnak, A. Ece, I. Yolbas, V. Bosnak, M. Kaplan and F. Gurkan	2009	Scorpion sting envenomation in children in southeast Turkey	Cross-Sectional
12.	D. M. Bowley, T. N. Rogers, T. Meyers and G. Pitcher	2007	Surgeons are failing to recognize children with HIV infection	Cross-Sectional
13.	M. A. Bugaje and H. A. Aikhionbara	2006	Paediatric HIV/AIDS seen at Ahmadu Bello University Teaching Hospital Zaria, Nigeria	Cross-Sectional
14.	N. Ceviker, K. Baykaner, S. Keskil, M. Cengel and M. Kaymaz	1995	Moderate head injuries in children as compared to other age groups, including the cases who had talked and deteriorated	Cohort

15.	P. Chan and A. Goh	1999	Respiratory syncytial virus infection in young Malaysian children	Cross-Sectional
16.	M. C. M. B. Duarte, M. Amorim, x00E, R. nia, L. E. Cuevas, J. Cabral-Filho and J. B. Correia	2005	Risk factors for death from meningococcal infection in Recife, Brazil	Cohort
17.	A. E.-R. El-Naggar, M. S. Abdalla, A. S. El-Sebaey and S. M. Badawy	2009	Clinical findings and cholinesterase levels in children of organophosphates and carbamates poisoning	Cross-Sectional
18.	J. B. E. Elusiyan, E. A. Adejuyigbe and O. O. Adeodu	2006	Hypoglycaemia in a Nigerian paediatric emergency ward	Cross-Sectional
19.	T. Erkan, H. Cam, H. C. Ozkan, E. Kiray, E. Erginoz, T. Kutlu, Y. Tastan and F. Cullu	2004	Clinical spectrum of acute abdominal pain in Turkish pediatric patients: a prospective study	Cohort
20.	S. Ernest, N. Anunobi and A. Adeniyi	2004	Correlates of emergency response interval and mortality from anemia in childhood	Cross-Sectional
21.	I. George and P. Tabansi	2010	An audit of cases admitted in the children emergency ward in a Nigerian tertiary hospital	Cross-Sectional
22.	M. H. Hamid, T. Butt, G. R. Baloch and S. Maqbool	2005	Acute poisoning in children	Cross-Sectional
23.	S. Ibeziako and R. Ibekwe	2004	Pattern and Outcome of Admissions in the Children's Emergency Room of the University of Nigeria Teaching Hospital, Enugu	Cross-Sectional
24.	R. Idro and J. Aloyo	2004	Manifestations, quality of emergency care and outcome of severe malaria in Mulago Hospital, Uganda	Cohort
25.	A. A. Ishak, N. H. Al-Jayefy and Y. A. Raja'a	2008	Profile of paediatric emergency cases in Yemen: The need for evidence-based guidelines	Cross-Sectional
26.	S. Jaffar, M. B. Van Hensbroek, A. Palmer, G. Schneider and B. Greenwood	1997	Predictors of a fatal outcome following childhood cerebral malaria	Cross-Sectional
27.	I. S. Keskil, M. K. Baykaner, N. Ceviker and M. Kaymaz	1995	Assessment of mortality associated with mild head injury in the pediatric age group	Cross-Sectional
28.	A. Krug, R. C. Pattinson and D. J. Power	2004	Why children die: An under-5 healthcare survey in Mafikeng region	Cross-Sectional
29.	J. R. Mabiala-Babela and P. Senga	2009	Nighttime attendance at the Pediatric Emergency Room of the University Hospital Centre in Brazzaville, Congo. [French]	Cross-Sectional
30.	H. C. Magree, F. M. Russell, R. Sa'aga, P. Greenwood, L. Tikoduadua, J. Pryor, L. Waqatakirewa, J. R. Carapetis and E. K. Mulholland	2005	Chest X-ray-confirmed pneumonia in children in Fiji	Cross-Sectional

31.	K. Maitland, J. A. Berkley, M. Shebbe, N. Peshu, M. English and C. R. Newton	2006	Children with severe malnutrition: can those at highest risk of death be identified with the WHO protocol?	Cross-Sectional
32.	D. E. Meier and J. L. Tarpley	1998	Typhoid intestinal perforations in Nigerian children	Cross-Sectional
33.	M. R. Molinero, K. R. Holden, L. C. Rodriguez, J. S. Collins, J. A. Samra and S. Shinnar	2009	Pediatric convulsive status epilepticus in Honduras, Central America	Cross-Sectional
34.	B. Namutangula, G. Ndeezi, J. S. Byarugaba and J. K. Tumwine	2007	Mannitol as adjunct therapy for childhood cerebral malaria in Uganda: A randomized clinical trial	Randomized Controlled Trial
35.	A. Narci, O. Solak, N. Turhan-Haktanir, A. Ayçiçek, Y. Demir, Y. Ela, E. Ozkaraca and Y. Terzi	2009	The prognostic importance of trauma scoring systems in pediatric patients	Cross-Sectional
36.	G. E. Ofovwe, M. O. Ibadin, P. O. Okunola and B. Ofoegbu	2005	Pattern of emergency neurologic morbidities in children	Cross-Sectional
37.	A. E. Orimadegun, O. Fawole, J. O. Okereke, F. O. Akinbami and O. Sodeinde	2007	Increasing burden of childhood severe malaria in a Nigerian tertiary hospital: Implication for control	Cross-Sectional
38.	H. Ozdogan, M. Davutoglu, M. Bosnak, M. Tutanc and K. Haspolat	2008	Pediatric poisonings in southeast of Turkey: epidemiological and clinical aspects	Cross-Sectional
39.	P. Poudel, R. Singh, S. Raja and S. Budhathoki	2008	Pediatric and neonatal tetanus: a hospital based study at eastern Nepal	Cross-Sectional
40.	M. A. Robertson and E. M. Molyneux	2001	Description of cause of serious illness and outcome in patients identified using ETAT guidelines in urban Malawi	Cross-Sectional
41.	M. Salaria and S. C. Singhi	2003	Profile of patients attending pediatric emergency service at Chandigarh	Cross-Sectional
42.	P. L. Semple, D. H. Bass and J. C. Peter	1998	Severe head injury in children--a preventable but forgotten epidemic	Cross-Sectional
43.	E. U. Siddiqui, J. A. Razzak, F. Naz and S. J. Khan	2008	Factors associated with hydrocarbon ingestion in children	Cross-Sectional
44.	S. Singhi, V. Jain and G. Gupta	2003	Pediatric emergencies at a tertiary care hospital in India	Cross-Sectional
45.	S. Singhi, S. V. Prasad and K. S. Chugh	1994	Hyponatremia in sick children: a marker of serious illness	Cross-Sectional
46.	R. Wammanda and F. Ali	2004	Conditions Associated with the Risk of Death Within 24 Hours of Admission in Children in Zaria, Nigeria	Cross-Sectional

Table 2.5: The categories of risk factors described among the articles in the literature review

CATEGORY OF MORTALITY RISK FACTORS IDENTIFIED	SUBCATEGORIES AND ARTICLES CITED IN THE REVIEW
Failed population prevention of communicable diseases	**Immunisation** Abdurrahman, 1983; Aikhionbare, 1989;Poudel, 2004; Bamgboye and Familusi, 1990, Ayoola, 2005 **Malaria prevention** Orimadegun, 2007; Ofovwe, 2005
The presence of co-infection worsening prognosis and mortality risk of stated primary condition	**Measles** Abdurrahman, 1983, Bamgboye and Familusi, 1990 **ARTI and GITI** Ibeziako and Ibekwe, 2002 **HIV** Ahmad et al., 2010 **Meningitis** Duarte et al., 2005 **RSV** Chan and Goh, 1999 **Seizures** Ofovwe, 2005; Molinero et al., 2009 **Associated with surgical emergencies** Meier and Tarpley, 1998; Abantanga et al., 2009; Erkhan,et al., 2004; Bowley, 2007
Malnutrition	**Protein energy malnutrition** Aikhionbare, 1989; Robertson and Molyneux, 2001 **Complicating the mortality risks among children with HIV** Ahmad, 2010 **Complicating the mortality risks among children with Malaria** Eluyisan, 2006
Maternal biological factors	**Parents illness** Bugaje and Aikhionbare, 2006 **Younger parents** Mabiala-Babela, 2009
Parental health practices	**Parents self- medicating their children** Ofovwe, 2005;Abantanga, 2009
Maternal levels of education	**Low levels of awareness** of acute signs/ of dangers of access to poisons Abdurrahman, 1983; Ozdogan, 2008. **Inability to make care seeking decisions** Abatanga, 2009; Mabiela Babela, 2009
Parental income	**Poorer parents had difficulty initiating, and continuing emergency care** Ozdogan, 2008; Hamid, 2005; Poudel, 2008

Social norms and traditional beliefs	**Beliefs limiting acceptance of clinical procedures** -Blood donation/banking Anti Obong, 1994; Ernest and Anunobi 2004; Robertson and Molyneux, 2001 -HIV testing Bowley, 2007; Bugaje and Aikhionbare, 2006
Features of the health facility	**Limited confirmatory laboratory testing for blood cultures** Hamid, 2005; Meier and Tarpley 1998 **Limited radiology facilities for confirming trauma and surgical signs** Ceviker, 1995; Magree, 2005; Meier and Tarpley, 1998 **Laboratory services limited due to poor water supply** Meier and Tarpley, 1998 **No qualified personnel** Meier, and Tarpley, 1998 **High user charges for emergency service** Wammanda, 2004; George and Tabansi, 2010 **Deficiencies in triage and resuscitation protocols** Adejuyigbe, 1992; Adesuknami, 1998; Idro and Aloyo, 2004; Singhi, 2003; Ernest and Anunobi, 2004; Krug, 2005; Wammanda, 2004; Ishak, 2005 **Absence of essential drugs** Krug, 2005; Idro and Aloyo, 2004; Wammanda, 2004;El Naggar, 2009
Access barriers to facility	**Terrain** Narci, 2009; Mabiela Babela, 2009; Duarte, 2005. **Multiple referrals along pathway to care** Duarte, 2005; Salaria, 2004; Narci, 2009

Table 2.6: The biochemical indicators and clinical signs identified as significantly associated with mortality in PEC

AUTHOR/ YEAR	PRIMARY CONDITION	CLINICAL SIGNS ASSOCIATED WITH MORTALITY	BIOCHEMICAL/SEROLOGICAL STUDIES REVEALED THESE INDICATORS ASSOCIATION WITH MORTALITY
Angyo 1996	Acute severe falciparum malaria	Shock p<0.001 Coma p<0.001	
Ahmad 2009	HIV		HIV seropositivity significantly raised odds of death within 24 h (p<0.001) and later deaths as well (p<0.001)
Ceviker 1998	Head trauma	Subarachnoid haemorrhage (p<0.05)	
Duarte 2005		Symptoms <24 h (AOR 3.8, 95 per cent CI 1.1–13.1),	Platelet count <100 000mm3 (AOR 13.8, 95 per cent CI 3.1–60.9) Acidosis (AOR 6.0, 95 per cent CI 1.7–21)
Eluyisan 2006			Patients with hypoglycaemia were thus more likely to die than those without p<0.05
Jaffar 1997		Cold periphery (odds ratio [OR] 2.7), Deep coma (OR 2.0),	Hypoglycemia (OR = 4. 1)
Keskil 1995		Glasgow coma scale scores and Subarachnoid haemorrhage (p<0.05) Focal neurological abnormality, in (89%) of the unfavourable outcome patients in our series(statistically nonsignificant)	
Maitland 2006		Bradycardia, Capillary refill time greater than 2 s, Weak pulse volume, Impaired consciousness level; Two or more features was associated with an odds ratio of 9.6 (95% CI ¼ 4.8 to 19) for early fatality (p < 0.0001)	

Narci 2009		AIS, ISS, TRISS and PTS were independent predictors of morbidity (p\0.05) Small number of mortality → no association but the morbidity is suggestive	
Orimadegun 2007		Wasting P<0.05 Respiratory distress P<0.05	Hypoglycaemia P<0.05
Poudel 2008		Seizure duration significantly associated with outcome sp<0.05	
Semple 1998		Glasgow coma Scores 3 - 4 following resuscitation; Diffuse cerebral swelling on computed Tomography.	
Singhi 1994			Hyponatremia (p<0.01).

2.5 Discussion

In preparation for this study, no other published systematic reviews were found which had examined the mortality risks among children attending paediatric emergency facilities in developing countries. Overall, the quality of the literature reviewed was good, relative to the stated principal aims and objectives. However, due to the predominantly cross-sectional descriptive methods used, causal associations with mortality could only be inferred.

The major themes emerging from the reviewed research highlighted specific points as being important along the PEC pathway in the facilities in developing country. There were:

1) The existing care burden on the health system:
    i) Systemic failures in the prevention of communicable diseases
    ii) The synergistic effects of multiple infectious states and malnutrition
2) Factors affecting parental HCSB along the PEC pathway
3) Failings within PER service delivery and organisation

The first set of factors directly addressed the existing high burden of care demanded at these facilities, from the synergy within co-infection and the effects of malnutrition. The remaining two sets described factors directly and indirectly impacting on the forward progression towards definitive treatment in the facilities, such as parental HCSB and features of the PER services. Altogether, the high burden and barriers to progress resulted in delayed progress/access to effective care at the designated facilities. The discussion of each of these sections compares the review's findings with previous literature, highlighting the limitations present and their relevance towards answering this study's central question.

2.5.1 Social Factors Identified within the Paediatric Emergency Care Pathway

2.5.1.1 Parental/Family Socioeconomic Factors

Low levels of parental income were specifically identified as being barriers to the seeking and initiating of emergency care by mothers (71% income <$2000 per annum) (Ozdogan et al., 2008, Poudel et al., 2008), while a lack of finances were a stated barrier to children's continuation in treatment. The modal proportions of mortality within the demographics were described and supported by correlations where available. The following groups of socioeconomic factors emerged from the literature: parental income/finances, place of residence, parental capacity, and practices regarding health, were all demonstrated using descriptive analysis (Ozdogan et al., 2008, Hamid et al., 2005, Poudel et al., 2008, Abantanga et al., 2009, Mabiala-Babela and Senga, 2009).

These findings reflect what has been previously shown regarding the association between mortality and socioeconomic indices among children in a wider population (Schellenberg et al., 2003, Victora et al., 2003, Houweling and Kunst, 2010, Houweling et al., 2005). A key methodology used in these studies was logistic regression, which allowed a comparison of the odds of survival against incomes and levels of education, demonstrating an inverse association with such factors against risks of mortality. Schell et al. (2007) reviewed data from 152 countries, and after correcting for confounding, they found GNI/capita, young female illiteracy, and income equality, predicted 92% of the variation in the observed child and infant mortality. Tipping and Segall (1995) in a review of multinational literature from developing countries suggested that the impact of parental incomes on care-seeking

was a direct reflection of the degree of financial independence afforded by the income. This independence among parents influenced decisions regarding attendance, ease of access and continuation in care. This finding was supported by a recent prospective cohort study from South America, which showed that children from families with low household incomes (threshold $2,000) tended to arrive significantly later (OR= 3.1; p=0.03) for emergency care and were more likely to die (OR=13.9; p=0.016) than wealthier children (Gavidia et al., 2012).

In this current review, two studies suggested using the effect of low socioeconomic status as a form of proxy for predicting odds of harmful exposure to ingested poisons (Siddiqui et al., 2008, Ozdogan et al., 2008). This exposure risk was also said to be potentiated by larger family sizes among the population studied, and Ozdogan et al. (2008) showed that 97% of the affected children were from larger families (>3 children). Previous work has identified family size, type of living conditions, and the presence of local cultural beliefs concerning parenting as confounding any association between parental supervision and socioeconomic status (Kasilo and Nhachi, 1992, Azizi et al., 1993, Peden, 2008).

This review highlighted possible urban/rural differentials in risks for mortality among children presenting to PEC (Hamid et al., 2005, Molinero et al., 2009, Bamgboye and Familusi, 1990). However, in all these studies mortality was found to follow the distribution of the study population. For example, in one study 60% of admissions and 70% of deaths occurred in the urban population of Ibadan, Nigeria (Bamgboye and Familusi, 1990), whilst in another study, 68.1% of all admissions and 100% of deaths were found to be among the urban population in Tegucigalpa, Honduras (Molinero et al., 2009). Hamid et al. (2005) was the only study in which correlational analysis were undertaken on the data, and this showed that the clinical

outcomes were significantly worse among urban dwelling children $p<0.01$ who comprised 51.7% of the population.

Two of the studies suggesting a higher urban risk, notably described the place of residence as urban 'slum' dwellings (Hamid et al., 2005, Yilmaz and Yildizdas, 2003). Hamid et al (2005) conducted a Chi squared analysis which suggested that peri-urban slum dwelling children were at significantly greater risk ($p<0.001$) for worse outcomes in care. However, there was no attempt to isolate the effect of the socioeconomic implications of the 'slum' designation of these urban places of dwelling. This demonstrates how the place of residence is potentially confounded by the socioeconomic features of the family in that dwelling. Another study implicated rural dwelling as being a higher mortality risk, and highlighted the attendant confounding effect of access/transport duration to the studied urban facility (Molinero et al., 2009). The urban access durations ranged from 30 minutes to 200 minutes, while rural access durations ranged from 35 minutes to 216 hours.

A systematic review of the evidence from 47 developing countries has highlighted the confounding role of socioeconomics in the implied association between mortality and place of residence (Van de Poel et al., 2007). The authors were able to show that the rural–urban risk ratios for U5MR was, on average, reduced by 59% after controlling for household wealth and for socio-demographic factors. This current review agrees with Van de Poel et al. (2007), in concluding that caution and these confounders must be taken into account in any evaluation of the effects of dwelling on mortality risks.

Parental education emerged in this review as being potentially relevant to the increase of exposure risks for children who were admitted to emergency care. One

study stated that the majority of parents of the children presenting with tetanus were illiterate (Poudel et al., 2008), while another study describing risks associated with acute poisoning, reported that over 50% of mothers and 10% of fathers of the affected children were illiterate (Ozdogan et al., 2008). This agreed with the work by Cleland and Van Ginneken (1988). Solutions for ameliorating the effects of the socioeconomic barriers faced by developing countries' communities as a whole for improving health for children and families are supported by evidence from a recent systematic review. Rassekh et al. (2009) identified 282 studies describing the types of interventions which affected health outcomes, the chief of which included information and education. Information-based interventions benefitted mothers in particular, and encouraged community cooperation with designated individuals within the community responsible for health, such as community health-extension workers.

2.5.1.2 Parental Response to Illness - Self-Medication and Rejection of Advice in Care

This review highlighted the home-based use of non-prescribed medication and resistance to treatment modalities in care. Two studies in this review (Ofovwe et al., 2005, Abantanga et al., 2009) described how non-prescribed/home-based plans worsened the prognoses of both medical and surgical emergencies. The use of non-prescribed medications for children by parents at home or in the community is reported as common across developing countries (Bate, 2008, Santos et al., 2009, Jain, 2011). The risk related to the practice of self-treatment is usually associated with an imprecision of dosages, inappropriate use of medications and counterfeit medications which are very commonly sold in developing countries (Bate, 2008, Santos et al., 2009, Jain, 2011). This potentially raises the risk of complications, and

has been implicated as the direct cause of the high proportions of mortality seen in the first 24 hours of care among the population studied by Ofovwe et al. (2005) in a tertiary PER in Benin, Nigeria.

Interestingly, parents were found to object to recommended therapies within PEC. Two studies mentioned parents' objections to the use of blood products for emergency transfusion as affecting the risks involved during illnesses complicated with anaemia (Antia-Obong, 1992, Ernest et al., 2004). Wider literature describing parental attitudes to blood products and their use in paediatrics describes the basis of these concerns as mainly steeped in religion or culture (Gillon, 2000). These cultural objections thus demand of this thesis, an examination of the prevailing cultural influences on HCSB.

2.5.1.3 Parenting capacity along the pathway

From this review, it becomes clearer that parents and that care available within a household are primary agencies affecting children's health outcomes. Many of these agencies' roles are indicated in all three intersecting models defining the conceptual sociocultural, economic, environmental and biomedical relationships between children and outcomes of wider healthcare and PEC (Mosley and Chen, 1984, Bronfenbrenner, 1979, Kissoon, 2009).

A definitive parenting framework was advanced by Belsky (1984) which examined the ontological development of parents' understanding of ,and responses to, children in their care. As such, parents' capacity to perform their roles, especially regarding their child's health needs, is shown in the model as being modified by the following domains: a parent's own developmental history; a parent's bio-psycho-social composition and socio-cultural and economic experiences; and finally, the

bio-social characteristics of their children. These domains exist in a delicate balance which is essential in preventing children's entry into the PEC pathway, as described by Kissoon depicts the balance of the child's steady state of health as directly dependent on the adequacy of prevention and prevailing agents of disease, which require a functional parenting figure (Kissoon and Goldman, 2007).

The review included research which described instances where the biological capacity of parents was diminished due to younger age (Mabiala-Babela and Senga, 2009) or attending illness (Bugaje and Aikhionbare, 2006), thus limiting their decision-making ability regarding children's continuity in care. This is supported by the findings of a recent systematic review which found that health and wellbeing of parents had a significant impact on the survival of their children (Atrash, 2011). This review also supported the exiting literature that studied the benefits of parents' having better indices of health, education and socioeconomic status, on improved survival for children (Atrash, 2011).

2.5.2 Clinical Factors Associated with Outcomes of Paediatric Emergency Care

2.5.2.1 The Synergistic Effects of Multiple Infectious States and Malnutrition

Among the studies in this review, the prevalence of multiple conditions within individual children was identified as being associated with greater fatality. Specific co-infections highlighted included: measles with bronchopneumonia (Abdurrahman, 1983, Bamgboye and Familusi, 1990), acute respiratory and gastrointestinal infections (Ibeziako and Ibekwe, 2004), HIV with malaria and meningitis (Ahmad et al., 2010), and respiratory syncytial virus (Chan and Goh, 1999). Opportunistic

infections associated with traumatic injuries and pre-surgical emergencies, also resulted in higher proportions of mortality.

The synergistic effect of the co-existence of two of the commonest infections causing death in children in the developing world, HIV and malaria, has been recently identified. A 2009 review highlighted the impact of the combined effects of these diseases on the endothelial barriers and the immune system (Hochman and Kim, 2009). However, the authors were unable to determine the effect of this synergy on clinical outcomes due to the presence of potential confounders, such as concomitant highly active antiretroviral therapy (HAART) and malaria medication, and the dearth of data about children in the SSA region. A recent evaluation of a large adult survey dataset confirmed the evidence of the association of increased HIV sero-positivity in higher malaria transmission populations (Cuadros et al., 2011). Both studies emphasised the need for field studies focused on quantifying these factors for further examination of the value of any interactions.

This current review highlighted the importance of manifestations of malnutrition resulting in deaths among children receiving PEC. The diagnosis of acute severe malnutrition was often one of the commonest single causes of death as reported by Ahmad et al. (2010), Aikhionbare et al. (1989), Abdurrahman (1983), Robertson and Molyneux (2001), and Mabiala-Babela and Senga (2009). The condition was also associated with raised proportions of mortality when co-existing with infections (Maitland et al., 2006, Elusiyan et al., 2006). Malnutrition, being a chronic disease state, is not usually amenable to the short-term interventions provided in emergency care (Robertson and Molyneux, 2001).

In their work describing the ‘malnutrition infection syndrome’, van Norren et al. (1986) highlighted the synergistic impact of this condition with acute states of infection leading to death. In support of this, other authors have found malnourished children with attending systemic infections while in hospital to be at raised risk, odds ratio 6.5, 95% confidence interval (CI) 2.2–19.9], $p < 0.02$ (Bhutta et al., 2008).

The nature of the included research designs, could not afford a detailed examination of the behaviour of established or suspected causal factors of malnutrition among the children in PEC.

2.5.3 Institutional Factors Associated with Outcomes of Paediatric Emergency Care

2.5.3.1 Emergency Triage and Treatment

The review especially identified failings within the existing, curative, health facilities similar to those uncovered by English et al. (2004a), English et al. (2004b) and Nolan (2001). These were specifically associated with non-existent triage and treatment protocols (Adejuyigbe et al., 1992, Adesunkanmi et al., 1998, Molyneux et al., 2006), absent equipment (Hamid et al., 2005, Meier and Tarpley, 1998, Ceviker et al., 1995, Magree et al., 2005), and no access to medication and testing modalities (Idro and Aloyo, 2004, Singhi et al., 2003, Ernest et al., 2004, Krug et al., 2004, Ishak et al., 2008, El-Naggar et al., 2009).

English and colleagues conducted qualitative surveys in Kenya and demonstrated the commonality of the organisational problems identified by Nolan et al. (2001) within SSA (English et al., 2004a; English et al., 2004b). Specific issues highlighted included the lack of standard treatment protocols and poor record keeping of routine outcome data. Collectively, Nolan et al. (2001) and English (2004a, 2004b) were

able to identify that these problems were due to a dearth of trained manpower and adequate access to consumable hospital supplies and equipment.

The link between poor quality care and patient outcomes suggested by Nolan (2001) and English (2004a, 2004b) has received recent attention. Biai et al. (2007) conducted a randomised controlled trial and found that training interventions for personnel significantly reduced mortality rates among children (0.48, confidence intervals 95% 0.29-0.79) Similarly, an intervention which enhanced staffing support and organisation amounted to differences of up to ten deaths per 1000 admissions, when compared with pre-intervention levels (Robison et al., 2012).

Much of the available capacity of the PEC services in the receiving hospitals is diminished by the scarcity of needed personnel and equipment (Gamatie et al., 1994). Nolan et al. (2001) carried out a mixed methods evaluation of 21 paediatric first level hospitals in seven developing countries. They identified failings in the organisation of existing clinical services, including triage, emergency care and in-patient care, and service space utilisation, as well as hospital infrastructure.

Interestingly, one of the studies identified by the review, Molyneux (2006) reported a drop in patient mortality from 10-18% to 6-8%, while deaths within 24 hours dropped from 36% to 12.6%, following the implementation of the ETAT protocol in 2001. The main limitations to service quality identified were poor access to essential materials for treatment and poor levels of staffing. This study highlighted how ETAT's improvement of triage efficiency, in turn highlighted the need to also restructure the receiving inpatient unit. This was in order to handle the volume of cases being sent through. As such, the attending changes following the introduction of the ETAT algorithm which occurred in staffing, service organisation

and infrastructure, were all identified as variably contributing to the better outcomes for care. The advantages of this intervention have been demonstrated in improving service efficiency in Brazil (Tamburlini, et al., 1999), Malawi (Robertson and Molyneux, 2001) and more recently South Africa (Buys et al., 2013). The existing limitations in the interpretation of how this tool improves patient outcomes were demonstrated by Gray and MacLennan (2008).

Although this current review has also identified within the literature triage as being among the chief issues in PERs across developing countries, staff training levels were also emphasised as barriers to efficient care. Grey and MacLennan (2008) had already identified these as potential confounders of the impact of ETAT training. Thus this further reinforces the importance of subsequent research designs, which should be aimed at examining the factors, processes and outcomes of PEC, in order to be able to collate detailed descriptions of organisation within PERs.

2.5.3.2 User Fees

Yet another service-based barrier identified in the review involved the organisational issue of multiple demands for user fees within a single admission. These were requested for services such as registration, medication and procedures, and even urgent ones such as blood transfusions; without these payments being made, the treatments, no matter how essential, would be delayed (Wammanda and Ali, 2004, George and Tabansi, 2010). Lagarde and Palmer (2008) reviewed the available evidence on the effectiveness of user fees in low and middle income countries and found the available evidence of effect for both the introduction and removal of user fees on access to health services in these countries to be weak. Their review went on to suggest that user fees were in fact deleterious as a whole, and in

most reported instances reduced engagement with preventive and curative healthcare services. Removal of these fees also resulted in modest increases in the use of preventive services. In both situations, the effect on patient outcomes was inconclusive.

Powell-Jackson et al. (2012) supported the claims of improved HCSB when user fees had been removed in their recent study using the randomised allocation of fee removal as a test intervention for 2194 families in Ghana. John (2013), in a critical examination of the literature on the impact of healthcare user fees in the SSA region, identified the need for the implementation of user fee frameworks to include a balanced assessment of the true requirements of the attending populations against the challenges facing healthcare financing in this region. The importance of user fees as only one of a broader package of financing for care in these environments, forms the basis for the renewed impetus for national coverage of health insurance as advocated in Nigeria, one of the largest populations in the SSA region (Obalum and Fiberesima, 2012, Obinna, 2012).

2.5.3.3 Emergency Transport

Only three studies reviewed here mentioned the potential contributions of transport related issues to poor outcomes via delayed access to care (Narci et al., 2009, Mabiala-Babela and Senga, 2009, Duarte et al., 2005). The rapid transport of patients needing emergency care is an integral part of the PEC pathway. The existence of an accessible, equipped ambulance service with the capacity to safely transport patients is sorely lacking in many developing countries (Baker, 2009a, Molyneux, 2009, Kobusingye et al., 2005, Roudsari et al., 2006, Duke, 2003). The principal forms of emergency transport in these countries are the use of individually

sourced and privately-managed means, for example commercial transportation, and personal/private vehicles (Razzak and Kellermann, 2002, Waseem et al., 2011). Furthermore, within less-developed and developing countries the available services are provider-dependent. As a result, parents/caretakers could be independently responsible for up to three independent transport events, as indicated in Figure 2.7.

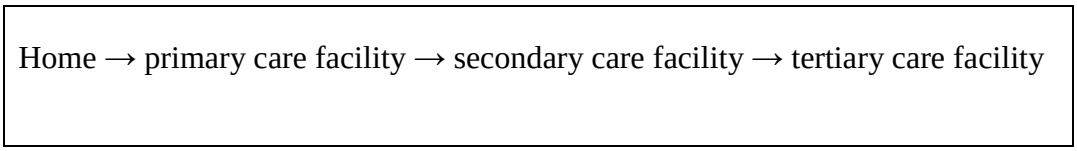


Figure 2.7 Chronological representation of placement of emergency transport events

In a cross-country comparison of nine developed and two developing countries of available emergency transport services, basic life support services were most commonly utilised in the developing countries (Roudsari et al., 2006). The study showed that the shortest emergency transport times of the cities evaluated were reported in Monterrey, Mexico. However, as these ambulances were transporting patients to facilities nearest their pick-up points, the short transport time had no significant impact on survival (Roudsari et al., 2006). This was due to the absence of designated trauma centres in the city at the time of the study. This served to highlight the disadvantages of having the available components of emergency transport and their not being integrated into the health system concerned.

A key obstacle to the effective emergency transport of children in developing countries involves the absence of viable road (or water or air) networks. This is further complicated by the placement of appropriate health facilities relative to the majority of the served population (Duke, 2003). Arguments have been made in support of, and in encouragement of, the use of local means of transport, such as taxis which are readily available in developing countries (Kobusingye et al., 2005,

Duke, 2003). It is estimated that at least one in five acutely unwell children in these countries benefit from an expedited arrival at hospital for PEC (Duke, 2003). This represents an example of the preference for using 'context-adapted' solutions within developing countries and PEC, thereby reflecting the principles of the WHO's 'limited care model' (Razzak and Kellermann, 2002).

2.5.3.4 Systemic Failures in the Prevention of Communicable Diseases

In the studies reviewed here, communicable diseases formed a large proportion of the primary indications for emergency admissions in developing countries. Among the major reasons presented for this were the failures of wide-scale preventive measures, in particular immunisation in these populations (Abdurrahman, 1983, Aikhionbare et al., 1989, Poudel et al., 2008, Bamgboye and Familusi, 1990, Ayoola et al., 2005). It was identified that these failures were the result of poor organisation of the intervention delivery and the non-availability of vaccines, as well as ineffective public education about the need for such vaccines.

The efficacy of the vaccines in controlling the incidence of infectious/ communicable childhood diseases as causes of death has been established following extensive clinical trials and on-going updates to systematic reviews of these trials (Demicheli et al., 2005, Demicheli et al., 2006, Demicheli et al., 2012, Graves and Gelband, 2006, Jefferson et al., 2005, Soares-Weiser et al., 2004). However, these vaccines have limited benefit when barriers to uptake and coverage are identified (Shefer et al., 1999, Mills et al., 2005).

The key reasons given by parents in these populations for actively avoiding vaccinations include concerns for safety, distrust of the procedure and personnel

administering the vaccine, as well as issues related to access (Mills et al., 2005). Mills and colleagues' review was somewhat limited by the selective description of studies which described parents who had already consented to vaccinate their children (if only in part). However, their evidence of parental distrust received support from Brown et al. (2010) which included a wider scope of study designs and parental vaccine options. It too found that parents tended to have strong beliefs in the statements concerning vaccines made in the popular media and non-official information sources (Brown et al., 2010).

As these reviews of the literature on parental opinions of vaccination shows, a massive re-education of the populace is required to address attitudes towards immunisation programmes in many developing country settings. One study within this current review identified low levels of public awareness as a factor in the low uptake of these vaccines among a population where over 90% of the deaths were due communicable diseases (Abdurrahman, 1983). The relative age of this research demonstrates that the issue facing vaccination coverage has long been recognised as a cause for concern in the SSA region.

2.5.4 An Underlying Mechanism Reflecting the importance of delays in progression through the pathway-examining Thaddeus and Maine (1994)

Four studies within this review highlighted 'delay' independently as a mechanism contributing to the outcomes of care among their populations, and specifically delayed attendance (Abatanga et al., 2009 Ofovwe et al, 2005) and delayed provision of care (Idro and Aloyo, 2004, Mabiala-Babela and Senga 2009, Ofovwe et al, 2005). This resulted in a reflection on the seminal examination by Thaddeus and

Maine of the types of factors that contribute to maternal mortality, which have been determined to affect the interval between the onset of obstetric complications and the clinical outcomes (Thaddeus and Maine, 1994). The defining premise of their work was that the outcomes were most adversely affected by delayed definitive treatment. The resulting framework of their study identified factors resulting in one or more of three stages of delay, namely:

1. The delay in making the decision to seek care when experiencing an emergency.
2. The delay in reaching an appropriate facility once the decision has been made to attend care.
3. The delay in receiving adequate and appropriate care within a PEC facility

Since their publication, adaptations have been made to the premises of Thaddeus and Maine (1994) in order to examine the factors involved in outcomes for adjacent fields of hospital-based and primary care delivery. In the literature on paediatric practice, comparable delays have been documented among acutely ill children, both neonates and infants. Primary delays identified in such works include over 90% with type 2 delays, delay in seeking appropriate care, and almost 40% of new-borns with Type 1 delays, i.e. not taken out of the home for care (Schumacher et al., 2002).

Again, looking at the simple model proposed by Kissoon and Goldman (2007), these very same points of delay can also be identified within the PEC pathway. Within this systematic review, it was easy to identify such delays throughout this chapter:

1. The social factors identified with parental HCSB –Type 1 delay
2. The relative absence of organized rapid emergency transport – Type 2 delay
3. The myriad issues of organization and lack of essential drugs and treatment amenities within the PEC services – Type 3 delay

These directly mirror the points of delay cited by Thaddeus and Maine, and suggest that these delays and their contributing factors are a principal issue within developing world PEC delivery. The risks involved are further compounded by those from multiple co-existing clinical conditions, thereby creating a synergistically greater need for urgency in the timing of care within PEC in developing countries.

A further underpinning of this review is provided by those factors contributing to this delay, identified within the wider scope of research by seeking out those affecting the outcomes. This further demonstrates the importance of determining which of these features and what other factors within the PER in Lagos are in existence, and to observe the processes in Lagos in order to begin to better understand their influence in the overall mechanisms towards the final outcomes.

2.6 Conclusion: Bridging the Gaps in the Existing Literature to Designing The Current Research

This review has demonstrated the importance of the population prevalence of communicable diseases co-occurring in children in this setting, as well as PER features which resulted in ineffective forward progression through the PEC pathways in developing countries, and highlighted the key types of delays along the PEC pathway.

The failure of systemic preventive programmes were considered by many experts in the SSA region in particular, to be at least partly responsible for the high burden of cases entering the PEC pathways in these countries, and the review was also able to demonstrate the high prevalence of co-existing medical conditions within the burden of care seen at these facilities. Sociocultural components affecting parental HCSB were identified, reflecting the impact of the wider determinants of socioeconomics, culture and psychosocial development. Key themes within African cultural belief systems regarding health and illness were used to illustrate the importance of these factors in HCSB within the PEC pathway.

As the primary mechanism identified across the literature reviewed was how the factors affected the forwards progression of children through the PEC pathway, the delays here were then compared against the principles within the 'Three delays model' of Thaddeus and Maine, which stressed as points of concern care-seeking, transport, and access to definitive care. The points for intervention identified here mirrored these, with a direct link being made to the barriers to definitive care within individual PERs and parental HCSB.

As a whole, this literature review also reinforced the claims of the 'super' framework, a connected appreciation of three well-known explanatory frameworks which helped locate the embedded position of the PEC pathway within the wider societal influences on health outcomes as defined in the literature. This framework shows a complex non-linearity of factor interactions; however, the impact of individual factors was often extrapolated. Indeed, where findings were supported with logistic regression analyses, confounding factors were identified by yet more features of the children's existence, which have yet to be described in detail within the data. An example of this was found in the impact of 'peri-urban slum dwelling'

on poorer outcomes among children in a Pakistan PER (Hamid et al., 2005). This association was confounded by the absence of qualifying descriptions of these dwellings as slums, as well as the relative location of the facility in question.

This review provides a good start towards providing descriptions of the variables/factors relevant to the PEC processes within individual PERs, against the causality of outcomes. For example, this review unpicked the wider socioeconomic features of the parents involved and identified the parental low-income component of socioeconomic status on delaying progression through PEC pathways. This review's critique of the evidence on this factor went on to outline the impact of the wider scale concept of 'socioeconomics/wealth' on mortality. Thus, it begins to clarify the importance of being aware of the detailed 'parts of the whole' among the factors expressed within the transition through this specific chronological process.

The literature examined in this review relied on quantifications of the patient outcome distributions, as well as prevalent diagnoses on admission to care in order to appreciate the presence of the implicated factors. All these were gleaned from cross-sectional access to patient records, and survey/proforma-based patient data collection. However, as a whole, these reports showed that the research did not provide the following:

1. Descriptions of theoretically implicated variables in ways which were sufficiently detailed to understand how they influenced PEC outcomes in their populations.
2. Descriptions of the social and organisational context of any of the following: a child's household, communities, or the PER. As such it was difficult to support the arguments implicating certain factors influencing outcomes.

3. Details from the perspectives of the individuals living through the relevant PEC process which led to the specific outcomes.

This demand for perspectives and deep descriptions reflects the potential advantages towards applying the qualitative 'naturalistic' tradition of research to examining PEC settings and populations. This is especially useful as it allows the collection and interpretation of data whilst appreciating the 'natural' setting of a phenomenon. Following the detailed description of first level care as part of an evaluation of hospitals in SSA (Nolan et al., 2001), Molyneux identified the importance of exploring what happens to children in PEC. Cooper and colleagues reviews (Cooper and Endacott, 2007, Cooper et al., 2009) of published emergency care literature have identified that the pragmatic application of qualitative research designs have proven invaluable in detailing the experiences within emergency care settings.

In this current study, this 'next step' has been validated by the limitations identified in the literature review, which sought factors and outcomes across the developing world PER settings. From the identified limitations it can be seen therefore, that in order to identify influential factors in the selected setting the overall methodological design:

a) Must facilitate the researcher's access to the PEC process, over time (not only in a cross-sectional view) using the PER as a point of convergence within the theoretical pathway. In respect of the research question, this point of convergence was the selected PER itself within children's first 24 hours of care.
b) Must incorporate data collection methods which provide:

i. Access to sources of information on experiences of children and other participants in the PEC pathway, centred on a child's progress.

ii. Access to the real life context of the PEC pathway as it converges on the selected setting.

c) Must consider the multiple perspectives gained from the methods above, towards providing richer descriptions, and validating emerging propositions. The study closely examined the theorised influences as shown in the 'super' framework. These were compared against what emerged empirically towards the final conclusions made concerning the influence of the identified factors.

2.7 Chapter Summary

The primary focus of the existing research has been on describing the prevalence of outcomes and the clinical conditions, which constitute the primary burdens of mortality within PEC facilities. This pre-existing research supports the premise of the multi-factorial causation of child mortality; however, it was limited by the predominantly retrospective cross-sectional nature of the pre-existing research in the field.

The limited view of the factors and context in the pre-existing research directly implies the need for research design methods able to accommodate a broader scope of information concerning the relevant variables interacting within a selected PER setting. These suggestions are supported by the gaps in the knowledge regarding important social context variables, identified as important for the effective functioning of existing policies. Without this detailed knowledge the most efficacious interventions will continue to fail the communities they serve, and will result in sustained high PEC-related and wider mortality.

The following chapter outlines the methodological approach taken in this research towards extending the scope of the pre-existing literature through a more explorative, contextually sensitive approach.

Chapter 3: Methodology and Research Methods

3.1 Introduction

From the consideration of the 'super' framework in Chapters 1 and 2, as well as the literature reviewed in Chapter 2, it emerged that the care outcomes for children seeking emergency care in developing countries are influenced in complex ways by multiple socioeconomic, cultural, clinical and environmental factors. These factors were considered influential in location and culture-specific ways within individual PER. The literature also strongly suggested that the impact of these factors was chiefly orchestrated through their impact on children's forward progression along the PEC pathway towards definitive care, and specifically how they delayed this progression.

In seeking to identify the influential factors at work in the specific context of the CHER in Lagos, this study examined the real-life depiction of the pathway of emergency care for children attending the CHER. This depiction was built up using a social construct comprised of direct observations, experiences and opinions of key individuals in the context. The resulting construct available for exploration in this study thus consisted of detailed multi-layered descriptions of the processes and outcomes along the PEC pathway in CHER. This allowed an exploration of each highlighted (group of) factor(s), with particular reference to how they emerged as contributing to mortality and other PEC outcomes.

This chapter is organised into seven sections and the details of the methodology are reproduced at some length in this chapter due to the novelty of the application of

the methodology in addressing the researched problem in this setting. It is hoped that this detailed audit of the conduct of this case study will, as advocated by authors such as Merriam (1998), Gerring (2007) and Yin (2009), facilitate the exploration of similar settings in the near future.

The first two definitive sections of the chapter (3.2 and 3.3) restate the purpose and nature of the research as directed by the conceptual relationships and limitations of the methodologies used in existing literature on PEC outcomes in hospitals in developing countries. Section 3.2 presents the evolution of the enquiry, grounded as it was in the philosophical paradigm of social constructivism. This section also explains the derivation of the study's research objectives from the central question. The following section describes the selection of the single-site case study design following a critical comparison of potentially eligible qualitative designs. Section 3.4 describes the practicalities of the field-based logistics and the limitations experienced, concluding with a detailed analytical strategy for the study. The next section (3.5) describes the data collection methods, while section 3.6 describes the process through which the fieldwork was concluded. Section 3.7 describes the central pattern-matching analytical strategy for the study, including an outline of how the analysis led to final interpretation of the collected data. Section 3.8 addresses the concerns of establishing study validity and rigour, while section 3.9 presents the Chapter's summary.

Sections 3.4 and 3.6 as well as three subsections of Section 3.4, are presented in the first person. This concurs with the conventions espoused in reports based on qualitative research which acknowledges the value of the researcher's position within the study, thereby lending a personal voice to the emerging interpretations (Emerson et al., 1995). This retention of the personal voice assists in better

projecting some of the richest parts of the research experience (Emerson et al., 1995).

3.2 Building a New Enquiry

The review of the literature in Chapter 2 demonstrated:

1. The socioeconomic and cultural factors which impacted on parental HCSB decisions, resulting in delayed care seeking for PEC in developing countries.
2. The limitations within developing countries' PEC facilities with regard to available equipment and the adequate organisation of triage.
3. The high prevalence of communicable diseases, leading to the high burden of care experienced by PEC linked with the failings of wide scale preventive interventions.

The 'super' framework, based on an amalgamation of three theoretical models on population-wide and PEC child survival outcomes, represented how all these sets of risk factors linked to the theoretical PEC chronological pathway. In turn, the pathway was thus identifiable as a small part of the wider socio-biomedical frameworks, explaining the roles of existing health service engagement and ecological characterisation of childhood development on health outcomes for children.

The key limitation of the previous literature examining individual PER settings was the use of an exclusively cross-sectional approach to examining the PEC populations. This mostly involved enumerating PEC outcomes within one individual PER without a detailed understanding of how these outcomes were experienced in a dynamic social environment. This strongly advocated the need for a more

longitudinal approach in any research hoping to advance this area of study. By gaining direct access to the experiences, through accounts and observation, this study gained much from the researcher's proximity to members of the studied context: the children, parents, caregivers, relatives and health professionals.

This study wholly embraced the broader contextualisation afforded by the worldview of social constructivism. In this way, the study extended the existing field of enquiry to accommodate the real-life status of the PEC experience from the viewpoints of those who lived it (Lincoln and Guba, 1985). Going beyond gathering demographics from informants, the study probed for opinions and sought corroborating or contrasting perspectives regarding the PEC experiences of children. This meant that the risk factors of influence could be appreciated, not for their mere presence, but actually within their contributory roles towards PEC outcomes in a named setting.

This study argued that interpretation of the evidence of these factors' influence would be enhanced by:

1) A rigorous inductive evaluation of collated real life empirical information.
2) A grounding of the resulting empirical knowledge in theoretical patterns making the final case for influence on outcomes.

Within a single setting, this produced a powerful tool for developing a dynamic appreciation of the processes and outcomes in the local PER (CHER LUTH) process. The case for wider relevance could then be made towards recommendations and plans for future research.

3.2.1 Selecting a Stance

The entire tradition of qualitative enquiry is based on the interpretation of phenomena by an observer towards the discovery of meaning. It is the precise practices used by the observer in these interpretations that reflect the espoused philosophical mind-set or worldview (Denzin and Lincoln, 2005, Creswell, 2007). Each worldview, which consists of the beliefs regarding reality and how it can best be represented and interpreted, guides the actions of a researcher throughout the research process (Creswell, 2007).

Physical scientists have traditionally harboured assumptions of a measurable reality, which is considered as being governable by explicitly provable laws and theories. The philosophical worldview demonstrated by these assumptions, positivism, demands strict adherence to a stated methodology and assures a reliably replicable result for every instance of experimentation carried out under those laws (Creswell, 2007). Between the 1930s and 1960s, positivism began to be adopted by social scientists with a view towards making the discipline more 'scientific' and the findings more generalisable (Donmoyer, 2008). However, over time it became increasingly evident that the nature of social research was more closely bound up with a reality that could not be measured using standard scales, and which could not be consistently replicated due to the non-controllable social environment (Donmoyer, 2008). Thomas Kuhn's 1962 work, *The Structure of Scientific Revolutions,* emphasised the importance of understanding that differences in an individual's socialisation inevitably produced varying perspectives on social phenomena. This was further supported in the work of authors such as Popper and Winch, who more clearly described the areas of 'logical incompatibility' between a

purely positivist approach to acquiring social knowledge whilst retaining concepts of a complex, unquantifiable social reality.

By the mid-1970s, Lincoln and Guba had posited the existence of a naturalistic paradigm where it was believed that the many different socialisation experiences among different peoples and cultures constructed a series of multiple social realities, which exist concurrently in a natural unaltered state. (Donmoyer, 2008, Denzin and Lincoln, 2005). Following the widening acceptance of the apparent paradigmatic extremes of positivism and naturalism, a proliferation of intervening worldviews began to be identified within the various social science disciplines. This led to a continuous evolution of the points of reference and definitions within the social sciences over time.

The ontology used in this research represents a position which emphasises the value of the contributions from individual constructions of concepts, perceptions and beliefs, towards a wider representation of reality, a social reality (Fox, 2008) and this represents a social constructivist perspective. A similar ontology is demonstrated within post-positivism; indeed, both constructivism and post-positivism proffer that our ability to know the 'real' social world depends on the interpretation produced by subjects during the research (Fox, 2008, Sharma, 2009). Constructivists, however, primarily reject any sense that there is an independent reality that is there to be uncovered or measured. This is in contrast to one of the key claims within post-positivism that existing scientific theories can deductively be used to derive hypotheses about the social realities which must be subjected to empirical testing of the gathered data (Flick, 2004, Sharma, 2009).

This thesis acknowledges the on-going enlightened discourse on the validity and construction of different worldviews, indeed the continual re-evaluation of worldviews supports acknowledging the effect of changes in the nature of socialisation, over time on perspectives. The assumptions of reality concerning the current research were based on an expectation that the reality within the PER could not be considered as being unitary. The experiences of the different groups and individuals would be expected to reveal the perspectives of the different participants. For example, a nurse's perspective of the death of a child would be likely to be bound up in her role as a provider and member of a clinical team, quite different from a parent's role and experience during their child's acute illness and death.

Constructivist ontology incorporates individual accounts and early perceptions of events by acknowledging and accommodating both these perspectives. Perception has been described as an active process of constructing meaning from experience (Flick, 2004). As such, perception-enriched descriptions, which can also represent early interpretations by research subjects/participants, can provide a deeper examination of the wider phenomenon of which the observed events are just a part. The general adoption of the constructivist approach precludes making unfounded assumptions about a population without attaining a closer look or acquiring a contemporary view from an individual or group perception.

3.2.2 Selecting a Final Design

The qualitative research tradition contributes to the naturalistic interpretation of social processes by producing rigorous analytical explanations (Hijmans and Wester, 2009). The process for selecting an appropriate qualitative design is subsequently based on: (a) the research question; (b) the limitations of the literature in the field

regarding the topic; and the (c) theorised relationships among the risk factors or variables involved in the studied phenomena (Hijmans and Wester, 2009). Based on these considerations, this research selected a design to accommodate the following characteristics:

a) The design must facilitate a researcher's access to the PEC process as it occurs over time, using the selected PER as a point of convergence as required by the research question.
b) The included data collection methods must provide:
    i) Access to sources of information on experiences of children.
    ii) Access to the real life context of the PEC pathway as it converges on the selected setting.
c) The design must facilitate a final interpretation using the different individual and group perspectives gained from the methods above. The resulting empirical findings are to be compared with conceptual or theorised patterns, leading to the final conclusions regarding the identified factors' influence on outcomes.

Being bound by space (the CHER) and time (first 24 hours in CHER) this study almost from its inception met the major part of the criteria for employing a case study approach (Merriam, 1998, Yin, 2009). Yin (2009) emphasised the suitability of case studies for answering questions:

a) Be focused on the investigation of complexly linked and interacting factors, and processes as they occur within a defined population.
b) Be able to produce findings for interpretation within the existing literature and theories surrounding the phenomena being studied.

c) Be flexible enough to accommodate information from multiple sources regarding the phenomena and the population.

Creswell (2007) identified five primary forms which strongly advance the use of naturalistic interpretations to advance social arguments and explanations rooted in real-life occurrences. Aside from the case study, the other designs include ethnography, phenomenological study, biographic and Grounded Theory designs.

Ethnography as a research design focuses on expounding the 'workings' of an entire cultural or social system: the behaviours, routines, and organisational structures binding groups of individuals together (Hammersley and Atkinson, 2007). Indeed the routine processes of the PER, could be seen as a micro-context within which specific cultural behaviours can be examined using an ethnographic approach (Creswell, 1998, Merriam, 1998). In addition, the data collection methods highlighted here include those associated with the 'ethnomethodology', as they allow lengthy immersion at studied sites affording the proximity needed to observe participants within a setting (Hammersley and Atkinson, 2007, Lincoln and Guba, 1995).

However, the delineation of a case study rather than ethnography for suitability in this current research is based on the study's intent as stated in the research question. Rather than an evaluation of the implicit knowledge of the participants' culture, this study aims to examine the nature of the phenomenon (PEC outcomes) by utilising a detailed investigation of the PER and its participants within its context.

Phenomenological research affords explorations of the shared experiences of participants, and the focus of such research allows centrally defined phenomena to be interpreted through participants experiences (Creswell, 2007, Adams and van

Manen, 2008). Although this current study relied on participants' experiences, they served as the material from which the PEC process could be reconstituted and examined. Case studies validate experiential information using observations and work towards acquiring a composite understanding of their target case phenomenon. In this current study, the focus groups and interviews were supported by observational data, and this underpins a case study's requirement for contemporary information about a studied setting (Yin, 2009). As such, both on-going and previous accounts were available to provide a detailed overview of the chronological nature of the researcher's PEC process.

Biography is unique as a research method as it gathers and interprets data about identified individuals, and aims to portray specific aspects of their lives (Miller, 2008). As such, the focus in such research is the study of an individual subject. In this research the focus was the process, within which parts of many individuals stories as they informed on this process were required.

The primary argument against employing Grounded Theory as the principal design for this study was that the case study represented a specific example of an empirically observed process being compared with the existing theoretical claims and linkages. This is similar to the mainstay of Grounded Theory methodology following Glaser's original method (Gilgun, 2010, Strauss and Corbin, 2007). This advocates the use of inductive methods for allowing the emergence of empirical patterns, wholly without pre-conceptions about inter-variable relationships, and as famously stated by Glaser: 'all is data' (Strauss and Corbin, 2007). Following the divergence of the Grounded Theory school of thought, Glaser maintained that generating new theories was best accomplished by allowing data to generate new frameworks, and thus presenting a challenge to the existing frameworks. Strauss and

Corbin advocated a systematic cyclical abductive process of analysis and theory testing and development (Gilgun, 2010). This variant sees the importance of acknowledging existing conceptual relationships for guiding the methodology and is based upon the belief that the consciousness of any researcher examining the data will retain an expectation of an existing theoretical relationship among social variables, no matter how rudimentary.

This current study was grounded in the 'super' framework, where wider societal and PEC processes possessed factors which influenced outcomes. This study's analysis was designed to emphasise the empirical patterns within the processes in CHER for comparison with the theoretical and literature evidence of their effect on outcomes. This was so that their relative importance towards outcomes could be determined in this specific PER. Conversely, analytical focus of Grounded Theory is on the development of general concepts and substantive theories, rather than the specific explanation that case study affords for the defined phenomenon (Hijmans and Wester, 2009).

Stake has stated that the choice of case study as the primary design is based on the philosophical and practical requirements of a piece of research to provide detailed examination of the individual case as defined (Stake, 1995). Thus, the types of methods used in the enquiry, although applicable as parts of the alternative designs, form the lesser concern and represent pragmatically selected tools.

Within this study, a specific set of events in the CHER within the 24-hour period formed the focus. This limited the view of the wider culture and individuals' experiences and stories to only what could be expressed within the processes of

children receiving PEC. As such, this study only provided a close-up view of collective behaviours relevant to the 'case' (Yin, 2009).

3.3 Defining the Case - 'Bounding the Study'

In defining the boundaries within this case study, the functional and physical limitations of the CHER were initially identified. This provided a simple way of conceiving the 'case' (Ragin, 1992). In addition, the theoretical assumptions about the roles of each group of participants within PEC were considered. These limits therefore included the routine events and experiences, as well as the previous and emerging details of the participants' interactions with the children. These stages have been identified as common-sense and theoretical bounding, respectively (Elger, 2009).

This 'casing' process also helped define the unit of analysis; the 'who' or 'what' being studied (Yin, 2009, Fletcher and Plakoyiannak, 2009, Gilgun, 2001). This was represented by the final outcomes of the children at the end of 24 hours in care, such as 'dead', 'transferred', 'admitted to in-patient care'.

Individual children served as informative units, and when examined as a larger group, they demonstrated different characteristics as well as final outcomes. This concurs with a belief shared collectively by Gilgun (2001) and Yin (2009) that the unit of analysis is the smallest unit of the case which can be examined intact. Thus, the final boundary of the case encompassed children admitted to CHER. It also included any sources of information about their pre- and in-hospital experiences - the setting and the other participants within PEC at CHER, such as parents and health professionals.

3.3.1 Selecting the Data Collection Methods

The epistemological requirements of this study involved identifying the principal viewpoints describing the experiences and events involving children during their paediatric care. Tates and Meeuwesen (2001) and more recently Cahill and Papageorgiou (2007), have acknowledged the triadic nature of communication within a paediatric clinical consultation. In seeking accurate, representative accounts, this study took advantage of these three different groups to allow the triangulation of the descriptions of these experiences.

The two stated objectives of this research study assumed a reality could be constructed from the accounts of the experiences of the different groups within the natural setting of the CHER. This demonstrates ontology traditionally associated with the naturalistic paradigm known as social constructivism. This ontology posits that for each individual, their socialisation experience serves to construct their own reality, as it occurs within their natural environment (Guba and Lincoln, 1994). The traditions of Piaget's cognitive constructivism advance the validity of examining the subjective experience for the knowledge of 'reality' in whole or in part (Flick, 2004). The study objectives reflected the constructivist epistemology and it was this which focussed the collection of experiential data, which for this approach are best gained from direct involvement with the individuals and events being studied (Berg, 2008).

The data collection methods were therefore selected to position the researcher to examine, first-hand, accounts of the social interchanges within the setting; accessing reproducible accounts of lived events and observed actions/phenomena (Marechal, 2009, Flick et al., 2004). These accounts, and the patterns of behaviour or activity

which they revealed on analysis, enriched the understanding of how different outcomes had been produced. The three methods used were as follows:

1) Observation
2) Parental interviewing
3) Key health professionals' focus groups

Interviewing was the primary technique selected for this study. The main principle exploited here was one of pre-existing social proximity among the participant groups, such as the parents with their children and professionals' child-centric routines within the setting. This study used this proximity for gathering the needed information and capturing the live 'drama' within the setting (Hermanns, 2004).

Parental and clinical/health professionals' accounts are, however, defined by different limitations when they originate within a healthcare setting. Health professionals' behaviour in the clinical care setting is bound within legally enforceable responsibilities, both to their employing institution and the patients (Gabe et al., 2004). Due consideration was therefore given to the need for the data collection process to conserve the privacy of the children and the confidentiality of the professionals, as well as the study's need for the research information. This specifically informed the study's separation of the processes utilised for interviewing parents and professionals.

Parents are assumed to be principal sources of information concerning their children within healthcare. This is due to the relative silence of children during clinical consultation situations (Cahill and Papageorgiou, 2007). In constructing a social reality, discourse within an interview conveys meaning that can be used to

build context and represent existing social relationships. However, considered in isolation, language merely reflects an individual's interpretations of the reality about which they are questioned (Marechal, 2009). For this reason, this study included the researcher's opinion as a third viewpoint to help construct the experiences. Therefore, as an observer, an additional assessment of the experience within the setting could be acquired (Luders, 2004).

All the health professionals involved in direct contact with the children during the case study conducted at CHER were either doctors or nurses. The participant selection pragmatically took advantage of this natural grouping in order to conduct group interviews in the form of focus groups. This allowed a collective view to be gathered from a greater breadth of experiences (Morgan, 1997), whilst also saving the lone researcher both time and study resources. Shared backgrounds and similar experiences within groups provide a basis for greater ease of participation and a sense of membership. This pre-existing camaraderie has been found to provide otherwise inaccessible insights into settings (Morgan, 1997).

3.3.2 Using Multiple Methods

Research designs in qualitative enquiries frequently involve the use of different methods, combining the resulting data and the analysis findings to produce a single set of interpretations (Creswell, 2007). In any combination, these designs can potentially offset the weaknesses inherent in mono-method/mono-perspective approaches, i.e. studies which are either only quantitative or qualitative in nature. In this manner a lack of context in one method (quantitative) can be balanced by the richness of the emerging interpretation in another (qualitative) (Bhattacharya, 2008, Creswell, 2009).

In this present study the 'mixing' involved a pragmatic selection of data collection methods in order to address the requirements of the research question. This approach appreciated the interplay between the technical requirements of the research, as well as the paradigm of the researcher (Bazeley, 2004). In mixed studies, it is useful at an early planning stage to define how each method will contribute to the whole and in this way the contributions towards interpretation and presentation of findings are made explicit *ab initio* (Creswell, 2009).

Explorations carried out in case studies frequently involve the use of multiple, relevant sources of data (Yin, 2009, Stake, 1995). Stake (1995) believes the pragmatic inclusion of different data takes advantage of the potential to build a more explicit composite picture of the sought after reality. Although both qualitative and quantitative data were collected within this study, the research design was primarily qualitative. The quantitative methods were incorporated purely to illustrate the importance of patient admission patterns in the context of the study.

3.3.3 Ethical Concerns

Ethical approval was first granted for this study in the UK by the University of Warwick Biomedical Research Ethics Committee in June 2010. Subsequent approval was granted in Lagos by the College of Medicine, University of Lagos, Research Grants and Experimentation Ethics committee of the College of Medicine Lagos (August 2010) (see Appendix C).

Both committees were furnished with details of the arrangements to secure the following:

- Confidentiality of the information collected
- An acceptable level of anonymity for the participants

All study information materials clearly stated the researcher's responsibilities regarding these concerns and these were similar to existing guidelines, primarily designed to minimise harm to participants (DeRoche and DeRoche, 2009). In principle, the ethical conduct of research demands the maintenance of subjects/participators' privacy. Full, transparent disclosure of research intent is also essential, which serves to engender trust among freely-volunteering participants (DeRoche and DeRoche, 2009).

The main topic in this study involved the understanding of child mortality risk. From this, it can be seen how special consideration would be required due to the potential sensitivity of the gathered information. The 'sensitivity' of research has proven difficult to define in health and social enquiries, and this study adhered to Sieber and Stanley's suggestion that efforts be made towards shared responsibility for the implications of the research, by both the participants and the researcher (Sieber and Stanley, 1988).

The design of the research meant that the patients and clinicians occasionally provided information while in shared circumstances. Some information was part of the clinical consultation, while conversations among clinical staff frequently occurred in shared, open spaces. However, even where segregated discussion occurred during focus groups, a potential risk involved an additional dimension of later disclosure across participants of different groups. The importance of this shared responsibility resulted in the use of written and verbal suggestions for conduct in respect of the confidentiality of co-participants. This material was included in the information material for the study (see Appendix C).

During the focus groups, a key concern was ‘over-disclosure’ within the groups regarding cases of child deaths. The effectiveness of focus groups in dealing with sensitive research topics has been debated regarding the ‘exposure’ of issues to a group (Wilkinson, 1998). However, the strength of cohesion within group dynamics has been suggested as protective, especially where there is joint membership among homogenous groups (Wilkinson, 1998). In this study specific advice was provided emphasizing that patients should not be identified and of the requirements of the study. Details and copies of the information materials are available in Appendix C.

3.3.3.1 Specific Caveat for this Study

The ethical review committee in Lagos strongly advised against the use of electronic recording media within the CHER due to a recent history of unflattering media coverage of the hospital. These reports had allegedly created an environment of suspicion of ‘strangers with microphones’ among members of the setting as a whole, and parents in particular. As a result, I was advised to only record daily field visits using handwritten notes in a field notebook.

3.3.3.2 Consent

The participants of both focus groups and interviews provided written consent prior to the start of the group and individual interviews. For full-length individual interviews, all participants’ questions about the study were addressed using the study information material (see Appendix C). Both written and recorded audio consent was obtained for all participants of the focus groups. The format of the consent form used is available in Appendix C.

3.3.3.3 Confidentiality

All field-notes taken during the observations and interviews contained shorthand identification references for all participants. Full names and hospital numbers were recorded in an ancillary journal and stored separately from the field notebook. The transcription of the audio recordings was carried out in part by an independent professional transcription service in the UK and was not conducted in Nigeria, further reducing the risk of recognition of both names and voices.

3.3.3.4 Anonymity

No full names were appended on any transcripts and shorthand notations identifying observed children were based on direct descriptions of memorable features of a child's clothing, for example 'blue lace baby', a baby whose mother was wearing a blue lace outfit on the morning she was admitted. During the focus groups participants were pre-instructed against using full names during the discussion and only abbreviated forms of names were used on the final transcripts.

3.4 Field Logistics - Entry into the Unknown

3.4.1 Negotiating Access

Negotiating access or entry into a fieldwork study setting has been described as 'a thoroughly practical matter'. It involves a researcher harnessing the range of available strategies in order to initiate and sustain useful relationships within the setting (Hammersley and Atkinson, 2007). The main set of individuals who relate to the researcher and actively assist in making the setting easily accessible are known as 'gatekeepers' (Hammersley and Atkinson, 2007).

At the early stages of the study, three paediatricians based in Lagos expressed concerns similar to those in the literature about the high mortality within PEC (Lesi, 2010). Once the study protocol was complete, communication with these doctors was established, towards accessing the local requirements for research within the CHER in Lagos.

In providing this advice, these gatekeepers emphasised the importance of establishing the transparency of the research intent in all included documentation. This was in deference to the stated concerns regarding the fear of media exploitation among potential participants at the CHER. A major contribution by the gatekeepers towards the preparation for fieldwork was their highlighting of points of local social etiquette. These included modes of address and styles of communication during the research. This information permitted an active reflection on how my age, gender and cultural position would be perceived relative to the parents and members of staff at the CHER. This concern was even more salient towards ensuring successful interactions with key senior personnel, such as the Consultant in Charge, Chief Nursing Officers, Chief Registrar, Senior Registrars and Chief Security Officer.

This mirrors the observations of Lewando Hundt (1988) concerning the importance of being aware of unexpressed, yet salient, participant preferences for interviewers of certain ethnicities and gender. Regarding the conduct of research in African contexts, it is deemed essential to find appropriate ways to maintain the harmony and balance of the host community, by making respectful, active efforts to conform to local traditions (Mkabela, 2005). I was personally familiar with these required norms, especially those regarding formal address, e.g. using titles where possible, and accompanying mandatory curtseying to elders of both genders.

Gatekeeper input was also useful for the design and preparation of the materials for participant information (leaflets and posters), which involved using more familiar phrasing of the information. Also included was advice about the spaces available for placing notices and non-obtrusive but noticeable colour schemes for posters and leaflets. They also served as the main Lagos postal contact for any notifications from the LUTH and the Ethics Committee in Lagos.

The success of these types of negotiations determine how well a researcher is received into the research setting, and form the basis of trust and ease of interaction (Hammersley and Atkinson, 2007). In the absence of this trust, reticence to interact with the researcher may arise among key participants, potentially limiting the scope of the data available (Wolf, 1991).

Once the fieldwork commenced, the gatekeepers requested no further information or access to the study data. A total of five informal discussions with one of the gatekeepers occurred over the course of the study, each lasting no more than 15 minutes, as indicated in the time notifications in the field notebook. These occurred during lunch breaks from the CHER and focused on general enquiries about the researcher's welfare. All of these were fairly evenly timed at 30 minutes, and always occurred within the visitor's lounge areas of the Department of Paediatrics.

2009	2010	2011	2012
Literature review Study design approval	Application for ethics, starting fieldwork • BIOMED Warwick • CMUL Ethics Lagos	Fieldwork • Observation/Interviews • Focus groups • Transcription and Analysis	Writing the report

Figure 3.1: Study timeline

3.4.2 Early Period of Observation

Once final ethical approval was granted at the end of August 2010, I embarked on a three-week period of general familiarisation of the site. This served to ease the start of my regular attendance at the study setting by becoming acquainted with staff and the routine of the PER.

A principal concern at this time was establishing my 'observer' role with the participants. In the position of a non-participant, it was important for there to be a balance between unbiased detachment and approachability. This was a particular concern regarding my position relative to the health professionals. Luders (2004) has suggested that the early establishment of the part played by a researcher in the setting is important, due to the subsequent, unavoidable transitions in this identity as habituation occurs.

This initial field position thus served as a reference point, allowing comparison and appreciation of changes over time. From this it was possible to discern how the meanings of observed events evolved over time, and this informed the study's

interpretations. The use of reflective memos documenting these further facilitated my understanding of how meanings changed over the course of the study.

In an attempt to help participants easily identify me during the fieldwork, I wore a t-shirt marked 'RESEARCHER', during the initial familiarisation period. Interestingly, it seemed to elicit a lot of amusement from parents and relatives and the frequent side-calls from patients proved a distraction to focused note taking. It became clear after this that such casual dress was unusual among women of my age group in this setting during normal business hours. As such, t-shirts were only worn during evening observations when the on-call personnel also dressed in tee-shirts. Consequently, at all other times a lanyard with a name card, stating 'RESEARCHER' was worn instead.

Information leaflets and A1-sized glossy posters describing the study were placed at strategic locations throughout the CHER on the main doors and on notice-boards in the following locations: above the triage table, in the nurses' station, in the pharmacy and in both treatment and consulting rooms. These all informed participants to 'talk to the RESEARCHER', and provided access phone numbers for further information (see Appendix C).

Participants quickly began to identify me as the person 'from the wall' and the attendant curiosity became useful in starting spontaneous conversations. Once when mistaken for a member of staff, another parent remonstrated "*no now, na she be the Researcher doctor* [No, she is the Researcher doctor!]"

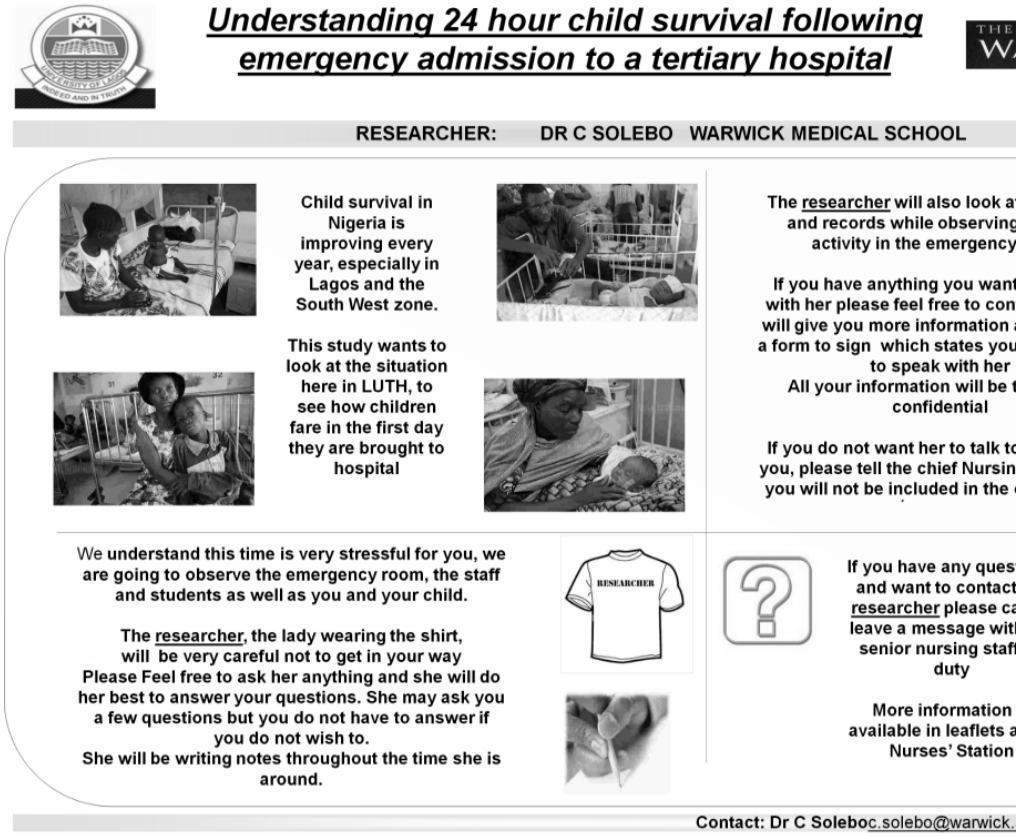


Figure 3.2 The information poster for the study which was placed in CHER, Lagos

Regarding my physical placement during the observations, it was essential to select the least obtrusive locations from which to take notes. The objective was to reduce any physical and functional disruptions to the setting. An examination of the room layout above (Figure 3.3)) showed the partitioned locations as physically and functionally separate. For this reason 'room corners' were eventually selected, which meant I basically stayed in the furthest corner of the selected room in order to observe and take notes.

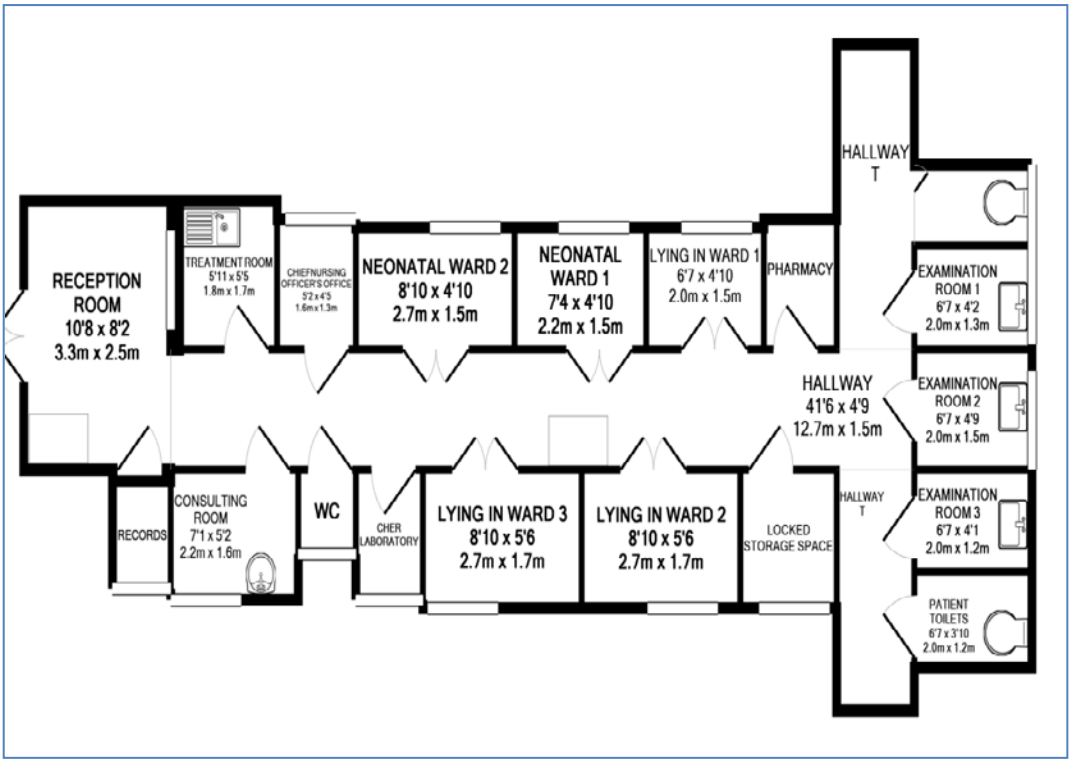


Figure 3.3: Floor plan and layout of the CHER

Another useful result of this period of familiarisation involved the size and style of notebook to use. This was important, not only for easy carriage and recording, but also as part of my identity as the researcher. The smaller notebooks evoked the question, "*Are you a journalist?*" from staff and patients alike. A perceptible cooling or even frank hostility, once evidenced by a disdainful 'hiss' from a nurse, often followed this question. This confirmed the earlier stated concerns about sentiments towards members of the popular press and the media in this setting. As a result, the hard-covered A4 notebook carried by medical students at the hospital was the notebook of choice. The added support of the covers also facilitated the production of more legible field notes when no desks were available during an observation/interview.

Information also emerged from this period on the best length of time to spend observing in the field. The relative amount of time needed to transcribe sessions of

between 4 and 5 hours ranged between 8 and 14 hours. These time periods of observation proved best over time for accurate recall during transcription. Notes from shorter sessions were more likely to be completely transcribed on the same day.

Access to the CHER team work rotation spreadsheets proved useful in identifying the most effective times to speak with personnel and parents. The CHER shift hand-over times are as follows: 8am, 2pm, and 8pm. For the half-hour periods preceding and following these times, administrative activities for the hand over process would take place. These included matching admission notes by nurses and joint ward rounds involving the incoming and outgoing teams of doctors. After this period parents would be relatively inactive, their child having just been reviewed by the clinical team during the hand over ward round. Also, at this time staff would be completing their paperwork from the ward round and settling in to their routine duties.

Yet another important schedule was the security duty schedule. This was important as the hospital's engagement of '24-hoursecurity' for the CHER did not extend to the weekends. The manifestation of wider security concerns in Lagos during the study influenced the observation schedule on at least two occasions. These involved periods of civil unrest regarding the recent spate of nationwide bombings. At these times evening movements across the Ikeja and Suru Lere borough (home of CHER) were considered ill-advised for non-essential personnel (Okojie, 2011).

The national electric grid for Nigeria's Power Holding Company (PHCN) presented serious challenges for the LUTH facility as a whole. It was during this period that I was made aware of the dependence of the facility on a set of back-up

generators. The fuel for these is procured using the annual budgetary allocation for infrastructure and engineers at LUTH are then forced to manage the fuel allowance across the facility by employing scheduling to ensure a balanced, if limited, provision of power (Lesi, 2010).

Finally, this period of observation also highlighted simple logistical information, such as the location of the taxi rank, bus stops, restrooms and restaurants closest to the ER.

3.4.3 Study Participants and Setting

Remaining in the qualitative tradition of emergent research, the sampling of parents, children and health professionals was based on purposeful sampling (Fletcher and Plakoyiannak, 2009). This involved selecting children who were eligible based on the timing of their admission, as close to their entry to care, based on my entry into the setting on that day. This form of non-probability sampling has been chiefly criticised for not producing representative findings following analysis.

However, one of the key reasons it was employed in this study was the under-explored nature of the risks to children during PEC, partially explained by the prevailing methodologies and to a lesser degree the limitations on funding for curative research. The practical challenges faced in accessing the CHER population for the needed deeper exploration of the sensitive topic, confirmed the population as difficult-to-reach. Among a ‘captive population’ such as within the CHER, the application of a purposeful selection strategy provided a pragmatic solution for addressing the research question (Vandebosch, 2008).

In extrapolating the findings of the study, this case study generalised the empirically observed patterns within the data, suggesting chronological and non-linear relationships among the factors, to the pre-existing patterns described by the Mosley and Chen (1984) framework, and not directly to another population. This process of case studies generalising to theory (analytical generalisation) after Yin (2009), is discussed in more detail in Section 3.7.

The eligibility of children had been pre-determined by the research question, i.e. they needed to have been in care for less than 24 hours to be observed. Every session of observation began with a description of the newest patients relative to the timing of the researcher's arrival at the site and so the children in the waiting area were described. Subsequently, the next child to arrive after the start of the observation would be followed into the consulting room and observed throughout their initial consultation. This also allowed observations to be made about simultaneous consultations occurring within the room. Once the immediate treatment plans were completed for the observed child, interviews with the parents were arranged.

An observation session would involve me as the researcher, discretely following the progress of a child, and checking on them directly while they were in the PER. I also examined case records to determine their final outcomes at the 24-hourmark following admission. In spite of some children having left the CHER before the next observation, their case folders were often still available thereby facilitating follow-up once children had been sent onto the wards.

The interviews conducted as part of the observation also followed the familiarisation period, during which acceptable etiquette for socialisation, as well as for interviewing, were determined. This involved determining how and when parents

were most receptive towards being asked questions. Contextual considerations of this nature are essential in order to allow participants and the researcher an acceptable amount of contact (Fletcher and Plakoyiannak, 2009).

The observation portion of the study had no pre-defined sample size. The evaluation of the data collected reached the point where no new findings emerged once 16 full length parental interviews and 89 child observations had been recorded. It is understood that when an additional interview does not bring any significant new data or the same issues are being repeated in the reported accounts, then the case study can be considered to be at the point of saturation (Aaltio and Heilmann, 2009). However, an additional two interviews and ten observations were included as eligible children were identified and this stage of data collection suspended when the CHER finally ceased new admissions in January 2011.

The focus groups were designed to accommodate between four and eight participants in each, which follows acceptable practice for focus groups (Hennink, 2007, Krueger and Casey, 2009, Morgan, 1997). Group sizes in this study varied only according to the available number of eligible participants, specifically, the numbers of professionals in the selected cadres. For example, in the Senior Registrar group, all three attended the meeting, as did all four Chief Nursing Officers. This range of group size permits easier control of the central conversations, and minimised any disruptions to the group's schedule (Morgan, 1997).

3.4.4 Instrument - A Structured Focus Group Discussion Guide

The conduct of the focus groups was timed to follow the observation sessions and this decision provided information on additional relevant social cues for enhancing

the conversations among these populations. These included topics for ice-breaker questions about popular sporting events and even local politics. In addition, the length of time spent in the setting prior to the focus groups fostered a better understanding of the importance of specific issues to the participating professionals.

From this information a structured discussion guide was designed for use across all the focus groups. The questions acknowledged that professionals, by virtue of their placement within the theoretical frameworks for health outcomes, would have been in proximity with different instances of outcomes, and as such served as potential observers of the existing patterns among different factors contributing to these outcomes (see Appendix C, section 3). By subjecting the groups to similar questions, a direct comparison across group opinions was possible and this allowed the identification of areas of dissent and consensus. In this way this instrument facilitated additional insight into the basis of the formation of group opinions (Hennink, 2007).

3.5 Data Collection Methods

3.5.1 Non-Participant Observation

For this study, observation was selected as the primary technique for the extended examination of the population and setting. The observational method as a whole affords the researcher the opportunity to use his/her five senses to study the immediate environment (Luders, 2004). In this study, a non-participatory observational role was adopted. This was due to the administrative restrictions of the roles of external primary researchers within the hospital, which specifically precluded participation in clinical routines. In determining the appropriate degree of participation, this constitutes a practical barrier to participation (Luders, 2004,

Darlington, 2002). By adopting non-participation, the researcher avoids any role within the pre-existing routine of the setting and can stand apart from all duties except those of the research (Luders, 2004).

Being aware of these existing restrictions I was able to plan towards maximising this non-participatory role. Such existing limitations to research methods can be easily accommodated within the purposes of a study (Williams, 2008), as researchers open themselves up to evolving research techniques to maximise their position. It has been argued that non-participation during observational research runs the risk of isolating the researcher from the insider's or emic perspective. However, non-participation does not preclude asking questions which may appear unintelligent, yet end up providing deep insight about the setting (Fetterman, 2009). In this study different participants would often be questioned about a singular event or observed decision(s). This served to better understand the motivations behind such decisions and actions of members of the setting.

Researchers using observation are by virtue of the method exposed to the breadth of the experiences of the participants or 'subjects' of the research. There is a tendency for the proximity between subject and researcher to foster a deep appreciation of subjective experiences; however, this also creates the risk that the primary research question may become lost in this experience. This may result in an increasingly subjective bias towards interpretations as the study progresses (Luders, 2004). The counter-risk posed by researchers carrying out observations involves an increased personal distance between the participants and the researcher, the risk of an uninvolved researcher.

These concerns about adopting extremes of perspective primarily arise from fears of biased interpretations (McKechnie, 2008). A warning sign with such research is the failure to identify alternative explanations or positions in the data. Lockyer (2008) has advocated the use of either writing templates or multiple observers where possible. This is to ensure that all assumptions from observational reports are subjected to critical scrutiny from discourse or comparison against established views and theories (Ogden, 2008). When such modalities are used they collectively provide ways to include multiple viewpoints into the interpretations of the findings (Lockyer, 2008, McKechnie, 2008, Luders, 2004).

In this study, the use of weekly teleconferences for the discussion of the data research techniques and personal reflections involving the researcher and the academic supervisors, served to supply the desired multiple viewpoints.

3.5.1.1 The Observation Process

During the observations at CHER, I documented the events and activities involving children and the other individuals within the setting. The time-frame in which each child was observed was their first 24 hours following admission. Between 30th September 2010 and February 28th 2011, 21 sessions of five hours each were conducted and Table 3.1 indicates the distribution of the sessions by date and time of day.

Table 3.1: The observation schedule in CHER for the fieldwork

Observation	Date	Shift Observed in CHER
1	3rd September	am
2	6th September	evening
3	8th September	am
4	10th September	pm
5	13th September	am
6	16th September	pm
7	20th September	am
8	27thSeptember	am
9	29th September	pm
10	5th October	pm
11	7th October	pm
12	13th October	evening
13	18th October	am
14	20th October	evening
15	27th October	pm
116	29th October	pm
17	3rd November	am
18	10th November	am
19	30th November	pm
20	2nd December	am
21	9th December	am

At the start of the study, a series of 30 observation sessions spread out over the three months on alternate days was considered a suitable schedule. This was with the aim of acquiring a month of observations in order to simulate a composite of the shortest staff change-over cycle available at the CHER, as the composition of each of the four CHER duty teams changes every 30 days (Lesi, 2010, Oshinaike, 2010). However, the number of sessions available for observation of children was drastically reduced during the course of the fieldwork. This was due to an industrial action/strike affecting over 95% of the other public paediatric emergency facilities in Lagos State. This strike, which began in September 2010, involved all the doctors employed in the public hospitals in Lagos State and lasted for seven months. The

strike was due to unmet demands by doctors for the implementation of the existing Consolidated Medical Salary Structure (CONMESS), and stoppage of taxes on some of their entitlements (Modern_Ghana, 2010, Nairaland_Politics, 2012, Olasunkanmi et al., 2011).

By the end of October 2010, barely two months into the fieldwork, the strike meant there was often no space for the admission of new patients in either the PER or the in-patient wards. This led to an acute shortage of functional emergency facilities for children, overcrowding and extensive boarding of patients, which involves patients remaining in bed spaces in an ER beyond prescribed periods (Timm et al., 2008).The available news reports of the on-going negotiations between the state government and the doctors were uninformative regarding when the strike would end. By early November 2010, intermittent closures of CHER began to occur due to fixed days of industrial action among doctors within LUTH itself, demonstrations of support for their colleagues employed by Lagos State.

In the course of the study, an unexpected benefit of adopting a non-participatory role emerged. My 'RESEARCHER' identification and ever-visible promotional material informed patients and clinical staff that I was not in the employ of either hospital management or the media. Once it was established that I was not a member of the clinical team, participants appeared to be more open to my questions and my overall presence in the CHER. This served as especially important due to my having previously been a member of the clinical team, albeit a full decade earlier. This information was reinforced as early as possible during all interviews and within any conversations during observations.

The effect of the presence and actions of the researcher on the setting and participants and vice versa, and reactivity may be viewed as disruptive to the normal routine in a studied context (Liu and Maitlis, 2009). As such, in pursuit of the collection of unbiased accounts, behaviour and responses, this process should in theory be aggressively counteracted (Liu and Maitlis, 2009). However, the counterargument is that these effects form a part of the sought-after natural realities of socialisation; after all, the researcher has become a part of the routine for however short a period of time (Flick et al., 2004). The researcher is also afforded a unique opportunity to glean from the process knowledge from tracing changes in their perspectives over time, thus better appreciating similar patterns in their study participants. Therefore, rather than making an effort to neutralise, the research should be allowed to benefit from a rigorous reflection on potential sources of reactivity.

In addressing this, active written and spoken reflection on techniques for non-obtrusive communication, was carried out throughout the fieldwork. A principal part of this reflexive process involved a weekly telephone conference involving my academic supervisors and myself. These included re-examining events of interest, and reflecting on potential meanings emerging from the interactions and events. From this I was encouraged to consciously make amendments to my questioning, listening and reporting style whilst at the fieldwork site.

Non-participation also provided the practical advantage of greater physical freedom during observations, as I was freely able to follow individual children through their movements in the facility.

Over the course of the fieldwork, I developed a personal form of shorthand and was increasingly able to reproduce longer portions of conversations. My notes also reported on participants' non-verbal communication, which proved to be a useful aid in the later transcriptions. The relative inaccuracy of handwriting and memory presents a real risk of recall bias during the transcription process from handwritten notes (Hammersley and Atkinson, 2007). The best way to improve the effectiveness of these methods was to ensure early transcription, either the same day or early the next day.

3.5.2 Interviewing

Interviewing provides the researcher with a participant's personal insight into a specific set of issues of interest (Brinkmann, 2008). Hermanns (2004) refers to the interviewing process as a 'drama' and describes a series of techniques aimed at maximising the social interaction during an interview. During the observations I conducted conversations with parents about their children's experiences. The observation itself informed the participant selection process for observation/interviewing regarding informing about the most suitable timing for interviews. Furthermore, following reflection upon my field notes, I was increasingly able to appreciate non-verbal cues regarding the inappropriateness of conversation.

The unstructured nature of the interviews meant the conversations were free to emerge naturally, and a combination of both closed and open-ended questions helped elicit the participants' experience of prior illness and emergency admission. Over time, I became more comfortable and adept at directing the conversations towards being more topically informative for the study.

3.5.2.1 The Interview Process

Of the conversations conducted with parents and caretakers over the seven-month period, the observations of 18 children led to full-length interviews of their parents. Children were initially selected because I had been present at their admission, but as the study continued alongside the doctors' strike, children were selected due to their eligibility regarding the lengths of their stay in hospital, i.e. less than 24 hours. This was because new patients became increasingly rare. As a result, I adopted the technique of interviewing the first two children I had observed as being held over for admission per observation session. As a result, there are no interviews with parents of children who left the CHER referred to outpatients' clinics (See Appendix D Table 1: Age gender and disposition of 18 children whose parents were also interviewed).

This decision represented a potential source of selection bias, which within positivist approaches based on randomised sampling in order to reduce chance, would be addressed by increasing the number of selected observations. This approach has also been applied within naturalistic research and has been accepted as a means for making the needed empirical generalisations stemming from such research (George and Bennett, 2005). It is certainly viable to assume that greater numbers of observations within a case study increases the number of available comparisons that can be made between observations with and without the variables under study (George and Bennett, 2005) and this is useful in explaining their roles in the observed phenomena. George and Bennett (2005) argue that case studies examine a greater number of characteristics of the studied phenomenon within each observation. Therefore, an approach which increasing the number of empirical observations by ensuring the interpretation includes multiple view points within the

same case context, affords the case study the ability to successfully challenge the guiding conceptual linkages. This was done in this study, employing the triangulation of acquired perspectives from the three data collection methods: the observations, the interviews and the focus groups.

All parents interviewed were approached after they had completed the admission, triage and initial clerking processes; their interviews taking place in between their interactions with the clinical team. Interviewing has been described as the opportunity to produce 'new' knowledge from participants' experiences and events (Barlow, 2009). Unstructured interviewing allowed the conversations to evolve spontaneously from casual queries about their child's illness and frequently progressed towards a parents' expression of the salient issues within their child's experiences in CHER.

The conversations, loosely woven around the social and clinical information concerning their child, were free to progress according to the parents' choice of topic. Specific probes were incorporated to establish how their child's clinical status had changed and any opinions on important factors affecting this. The resulting discussions focused on the issue(s) most salient to each parent concerning their own child's experience. As with all the conversations in this study, the field notes for the interviews were handwritten. The setting of the research allowed available parents to be interviewed within their own selected rest area in the PER.

Towards the end of the study, the use of some queries and probes had become part of a framework of questions, reflecting on both the in-care experiences. These questions requested descriptions of the home and family environments of the children prior to CHER during the index illness (see Appendix C). The focus

however, remained firmly on appreciating the culmination of all the potential risks at the end of the 24-hour period.

3.5.3 The Focus group interviews

Focus groups are used as a form of interview which relies on the discussion, among a selected group of people, of topics presented by the researcher (Morgan, 1997). These groups typically contain between 4-8 people, and this relatively small number allows a researcher to be sensitive to the dynamics of the group and maintain an atmosphere of mutual respect among participants (Morgan, 1997, Krueger and Casey, 2009, Wilkinson, 1998).

These groups, involving key health professionals working in the CHER, were included in this study for their ability to potentially produce a composite of opinions generated by professionals about risk factors to children. The groups also served as a platform for further examining emerging issues from the observation, and interview data and triangulated during interpretation.

The health professionals were placed into four homogenous groups based on their work cadre. In principle, the homogeneity within groups is based on what the participants share with respect to the research topic. Among colleagues, this involved shared background and similar experiences, rather than simple demographic characteristics (Wilkinson, 1998, Morgan, 1997).

The timing of data collection placed the focus groups after the observations. From the on-going evaluation of the collected observation data, a series of current topical questions were formed. These contributed to the structured discussion guide containing the main questions and subtopics and served to improve the quality of

information received in order to ensure that the opinions were given similar attention during the group sessions (Hennink, 2007).

3.5.3.1 The Focus Group Process

The four groups of staff differed according to their level of training and average years of tenure of service at the CHER. With regard to their routine duties, these groups also differed in the length of time spent with individual children. The breadth of groups also allowed access to historical and contemporary information about the children observed and the PER itself. The four focus groups conducted at CHER were composed as shown in Table 3.2.

Table 3.2: Groups of participants in the four focus groups held in Lagos

GROUP COMPOSITION	NUMBER IN ATTENDANCE	PERCENTAGE OF TARGET GROUP ATTENDANCE	INVITED NUMBER	RANGE OF YEARS SPENT BY PARTICIPANTS WORKING IN LUTH
Group1 Senior Registrars	3	100% (of 3)	maximum number employed	4-7 years
Group2 Junior Registrars	7	87.5% (of 8)	10	1-3 years
Group 3 Chief Nursing Officers	4	100% (of 4)	4 * maximum number employed	12-19 years
Group 4 House Officers	5	71.4% (of 7)	8	1 month

*includes 20% over recruitment

The group sessions were conducted over four weeks in March 2011, and each group lasted for 1 hour 20 minutes. Their placement in the study schedule allowed material from the observations and interviews to inform the content of the questions.

The placement of these focus groups themselves within the thesis is based on the acknowledgement of the unique position of the health professionals.

These individuals formed a key part of the functional element of service provision in the PER, and were important as they were potentially different from the parental perspective gathered during the observations. This improved the credibility of any assertions as they were supported by data from both perspectives.

During these groups my primary role involved keeping the discussion on track and posing the questions, while actively encouraging all participants to contribute (Mack et al., 2005). The groups were conducted using the structured discussion guide. In addition, recall of specific events was encouraged by asking the participants to write out their accounts and to then read them out (Figures 3.4 and 3.5).The question guide was checked for suitability of content and breadth by the academic supervisors in Warwick, as well as the academics in Lagos prior to its use.

The group sizes were in keeping with the suggested average sizes of such groups, although deliberate over-recruitment was carried out to allow for drop-outs. A rolling reminder strategy was also used which involved daily electronic text messages sent to all invitees in the final week leading up to the group meetings. Finally, on the day before each group, the participants' immediate line-supervisors were contacted to ensure no schedule conflicts had occurred to affect participation.

During the conversations leading up to recruitment it was important to ascertain individual's levels of comfort regarding participating in a group discussion. Joint-participation among a group of their colleagues was emphasised, as was my intent to make audio recordings of the discussions. Authors such as Morgan (1997) agree that advance discussion of such risks helps prepare participants for open discussion.

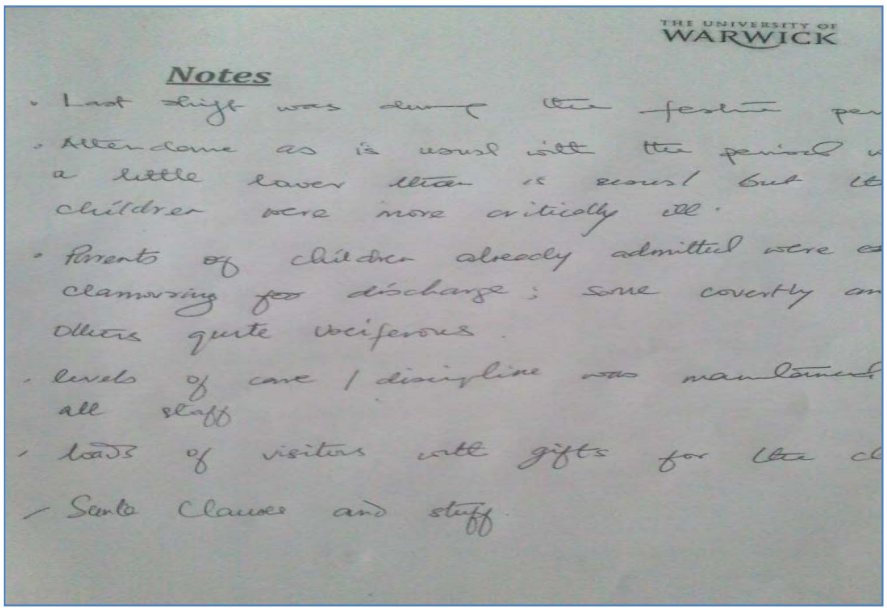


Figure 3.4: Self-written account of a notable case discussed during a focus group

The University of
Warwick

Notes

- Last shift was during the festive period
- Attendance as is usual with the period was a little lower than is usual but it meant children were more critically ill.
- Parents of children already admitted were all clamouring for discharge; some covertly and others quite vociferous.
- Levels of care/discipline were maintained by all staff
- Loads of visitors with gifts for the children
- Santa Claus and stuff

Figure 3.5: Text of self-written account of notable case during last shift experience

One potential barrier to the effectiveness of these groups identified earlier in the study, involved scheduling difficulties for staff members who operated a shift schedule. This was particularly true in the case of the Nursing Officers, whose duty rosters have been designed to not overlap. Serendipitously, there was an industrial action of the Nurses Union in support of the Lagos Doctor's strike, which meant that

all the invited nurses were only available for the meeting for one afternoon. Invited doctors were officially released from their units as pre-arranged by the consultant in charge of the CHER.

A note-taker was employed for the purposes of this study and this individual collected summaries of each set of responses to the questions during the focus groups. Additional duties of the note taker included the management of stationery, catering and the audio recording system. A signed and witnessed confidentiality agreement was also secured from the note taker prior to their formal engagement. The note-taker had also taken time-stamped handwritten shorthand notes of the main points during the meeting and noted events during the discussion, such as any disruptions to the discussion, arrivals and departures of participants, as well as non-verbal cues. These were appended to the final versions of the text files for analysis.

3.5.4 Patient Admission Patterns

Collations of patient outcomes data were available to the researcher from the Central Nurses (CN) database records. The available records collated the immediate past 6 months of outcomes following admissions and deaths within 24 hours in the same period. Access to data in storage for the CHER was beyond the remit of the ethical approval given to the study, which only allowed access to information available within the PER at the time of the study. Although enquires were made regarding databases predating 2010, the ethical review calendar could not sufficiently accommodate the time line of the study as a whole.

The final diagnoses recorded for these patients were based on the clinical judgement of the managing physicians, available imaging and laboratory tests, and the numerical nature of the records meant descriptive statistics were used to examine

the prevailing patterns of distribution among these patients. The data were anonymously collated onto a Microsoft Office Excel® Spreadsheet and stored on the Files.Warwick server. This allowed the generation of graphs and tables showing the normal distributions of the outcomes for the period. The descriptions of the patterns observed following the descriptive analysis of these data are detailed in Chapter 4.

Challenges encountered with these data included non-standard means of reporting the primary diagnoses; some nurses appended only one of up to four working diagnoses, based on the last reported written diagnosis in the clinical notes. The use of autopsy reports for confirming diagnoses was extremely rare and some of the entries in the CN database were incomplete at the time they were compiled for use.

The details taken during the fieldwork included basic demographics, such as age and gender, which were obtained either from a direct view of the case notes themselves or by asking parents/caretakers. It was believed that examining the patterns in the collated data against the existing patterns would help to verify how well the studied sample represented the CHER routine.

The outcomes of care were similar to those recorded in the CN database. Here, the primary listed diagnoses were the last recorded within the case notes at the end of the first 24-hourperiod of a child being in the CHER. The children's data were stored on a Microsoft Office Excel® Spreadsheet and saved on the Files.Warwick server. This allowed the generation of graphs and tables showing the distributions of the outcomes according to age and diagnosis for the period.

Challenges encountered with these data were similar to those described above with the CN data. Additionally, some children's demographic data were incomplete; these mostly involved children who transited through the PER almost immediately

after or prior to triage to other facilities, or who did not return to care the same day. At the same time, the observed children's demographics, gender, age and diagnoses at 24 hours, were collated during the fieldwork. NVIVO 8© produced simple spreadsheets from these data permitting descriptive analysis, and the results of these are provided in Chapter 4.

These two sets of simple quantitative data provided useful complimentary sources of internal context information valuable for improving the validity of qualitative research (Creswell, 2007). This facilitated the comparison of trends in the CHER with external patterns and helped to determine the extent to which the sampling for the study compared with the existing CHER pattern.

3.6 Field Logistics: Leaving the Field

Towards the end of December 2010, it was becoming increasingly clear that the patterns of information being retrieved were increasingly familiar. This remained true despite changing the shifts normally observed. Also, as described earlier, the effects of the strike action at LUTH itself had drastically reduced new patient numbers, and by extension, eligible participants for observation.

The final set of observations was carried out in mid-December; however, none of the children observed were able to remain at the CHER due to a lack of available wards or bed spaces. Following a review of these notes and a discussion with my academic supervisors, the observation/interview phases of the fieldwork were terminated.

3.6.1 Data Management

The observations and the interviews were recorded using handwritten field notes, while the focus groups were recorded using an electronic audio recorder. Both sets of data were transcribed and the text files input as NVIVO8® project sources. These were stored as both electronic and hard copies, as described earlier. The organisation of the storage of these materials is summarised in Table 3.3.

Table 3.3: Contents of study database

SOURCE MATERIAL	FORM OF DATA	FORM IN WHICH ANALYSED	NUMBER OF FILES
Field-notes	Field note entries → MS Word Documents	NVIVO 8 Internal files	24
Interviews	Field note entries → MS Word Documents	NVIVO 8 Internal files	18
Audio recordings	Mpeg Audio/Windows AVI files	NVIVO 8 Internal files	4
Central database spread-sheets copied	Field note entries → SPSS 18 Spread sheets	SPSS 18 Spread sheets	2
Field Notebook-reflective memos and identifiable information	Hard copy notebook	N/A	1

3.7 Data Analysis - Using a Pattern Matching Strategy

Yin (2009) has identified the failure in clearly defining analytical strategies as a major barrier to the rigour of case study research. This process involved the appraisal of the purpose for the study against the theoretical/conceptual linkages of the variables provided by the literature review within the studied phenomenon. In other words, it addresses how the data collected is to be interpreted in a transparent, unbiased and valid manner.

The aim of this study was to determine which of the factors highlighted within the literature-based models of the PEC process were influential on outcomes within the selected PER setting. This presented the opportunity to subsequently determine the empirical patterns of influence among these risk factors and to validate them within this specific case. Consequently, the study assumed a pattern matching focus for interpretation of the qualitative data. The term 'pattern matching' simply describes the matching of an empirical pattern with an expected pattern, as expressed within a hypothesis. This leads to an interpretation which states whether the patterns match and as a result, confirm the hypothesis. Where a mismatch occurs, the hypothesis is disconfirmed; therefore , it is essential, that the expected pattern is carefully stated early in the procedure (Hak and Dul, 2009).

Campbell's argument in favour of pattern matching presents this as an approach which empowers a single case study to stand as a situational challenge to the concepts and linkages in a theoretical pattern. Although Yin has advocated that at least two cases be the sources for compared explanations, the validity of the explanations in this study was buoyed by dataset triangulation. This meant that different sets of propositions about factors which emerged from the analysis of multiple perspectives on the PEC process were available within this case study (Yin, 2009).

The pattern-matching logic allowed a within-case examination of the applicability of the hypotheses for causing outcomes. The weight of the support for hypotheses regarding the factors involved in PEC was based on an evaluation of confirmatory and rival explanations as they materialised within the pattern matching procedure, and the analysis therefore involved:

1) Acknowledging the theoretical patterns of interest from literature.
2) Exploring the empirical data for emerging meanings (analytical induction)
3) Triangulation of emerging propositions regarding factors in the data.
4) Testing composite propositions concerning factors to determine whether they support the theoretically proposed patterns towards influencing outcomes.

3.7.1 Acknowledging the Theoretical Patterns of Interest from Literature

The 'super' framework adopted within this study highlighted three independent models which collectively showcased the myriad forms of both independent and dependent risk factors or variables within the process of PEC relative to the child in the context of attendance of care at the selected PER. These patterns implied some effect on the outcomes of PEC, but could not confirm any one factor's causal route to the mortality outcome.

The frameworks theorised the placement of socioeconomic, psychosocial, cultural and environmental determinants, and their impact on personal illness control, followed by the chronological cascade of events towards the PEC outcome (Figure 2.3). The literature reviewed identified the focus of these wider influences as sets of factors affecting high existing burdens of care, parental HCSB, and the organisation of PER services. Furthermore, the literature identified these points as being identical to those within the 'Three Delay' model of Thaddeus and Maine (1990). The resulting delays at key points of the maternal emergency care-seeking model have been demonstrated as resulting in poor outcomes in the developing county context. Therefore, by combining these it was clear that the position of previous literature was that the chances of less desirable outcomes were affected by:

- Socioeconomic, cultural and psychosocial factors affecting parental HCSB and the timing of care seeking (Type 1 Delays),
- The quality of PEC organisation and delivery (no emergency transport; poor triage; poor treatment protocols) affecting delayed access to PER and delayed access to definitive PEC management (Type 2 Delays and Type 3 delays)

As such, these propositions were available for comparing the behaviour of factors emerging from across the data relative to the reported outcomes as observed.

3.7.2 Exploring the Empirical Data for Emerging Patterns

3.7.2.1 Using Analytical Induction

The data collected from the observations, experiences and descriptions were explored for their meaning using an analytical inductive process. Although a basic technique used in the development of Grounded Theorising (Gilgun, 2010), this was not a Grounded Theory case study because the applications of the induction were to allow testing of the theoretical patterns rather than for generating new ones (Gilgun, 2010). There are similarities in the approach between the constant comparison technique for Grounded Theorisation and analytical induction as specifically used in case studies (Gilgun, 2001). The constant comparison technique also utilises a systematic cyclical examination of the data towards exhaustively suggesting and re-confirming relationships and categories within the data. Glaser and Strauss emphasised that the constant comparison method presents as a baseline the consideration of all available data to be searched until the point of saturation is reached (Gilgun, 2010). Analytical induction also provides this thoroughness of

examination; however, its purview is within the boundaries of a clearly defined case, and the end point of case data analytical induction is not merely saturation. Instead, it is the identification of emerging contradictions to the existing theories either across multiple cases or within a single case or its contributing units of analysis (Gilgun, 2001).

Here, rather than a grand sociological theory, the theoretical foundations were the 'super' framework's conceptualisation of causal influences towards patient health outcomes. The units of analysis were the focus of the sources of information, namely the children identified in the research question The emerging empirical patterns from the CHER were therefore to be tested to either show the situation in the CHER was in support or a critical deviation from the expected patterns.

3.7.2.2 Coding: From Early Impressions to Categories within the Data

The textual data in this study was derived from the three methods: observations formed dataset O, interviews- dataset I, and focus groups dataset F. Chronologically, dataset O was the first to be gathered, followed by dataset I. In fact, dataset F was only gathered when collection of datasets O and I had been completed. This was to allow the questioning of the focus group participants, to be based on as much of the information from the other participants and the setting as possible.

The impressions derived from the textual data emerged from reading and rereading the material with intensifying focus. First, the smallest concepts to emerge freely from the text were identified. This process (open coding) allowed singular objects of interest within the data, to be uniquely labelled, beginning the appreciation

of their placement in the conceptual processes of PEC in the setting (Benaquisto, 2008).

Coding of dataset O began as early as the fifth observation session. These early codes had labels such as ‘parent describes symptoms’; however, these early codes were refined over time by examining their range and adjusting them to accommodate fewer basic concepts. For example, an early code such as ‘parent recognises signs and symptoms’ was later redefined as a category encompassing codes such as ‘parent aware of illness’, ‘parent knowledge of signs’, ‘parent previously familiar with signs’. This reflexive appreciation of each of these codes as representing individual ideas within the data was conducted, and resulted in a cyclical re-examination of the codes until the final set of codes was derived. The open coding process finally identified 119 codes.

The codes themselves were then more thoroughly examined to identify how they were related, retaining an appreciation of their roles within emerging larger categories and sub-categories (axial coding). This axial coding process was based upon acknowledging the conceptual relationships between these codes both as they emerged from the data and as informed by the foundational conceptual relationships identified in pre-existing literature e.g. proximally timed codes in the PEC process as well as those affecting the same groups of participants.

Among the earliest of these larger categories identified in these data was the one representing: ‘home-based influences’; this category encompassed decisions, behaviours and actions located in the home/community. The literature review had identified the socioeconomic, cultural and psychosocial features contributing to this influence, and this category highlighted the logic through which the socioeconomic

and sociocultural sub-categories affected the chronological progression of sign recognition through the decisions to seek care. The importance of isolating each of these motivations helped to expand the pool of information about how home centred activities were underpinned by broader factors expressed within the home. In explaining the relationships between these categories, the logic of parental decision-making in the context of Lagos, the available PER services, including the CHER, and the importance of being aware of this context, also emerged and could be described. Thus, it was the axial coding process which revealed the importance of the functional and physical boundaries of the household/home influences. The eventual placement in the explanatory diagrams of the PEC process made good use of this defined axis.

Nine discrete categories emerged from the axial coding process and these were then subjected to a reflexive examination by the researcher using free-hand concept maps (see figure 3.6 below). This mapping process helped highlight the underlying logic based on the chronology of the activities involving the key individuals culminating at CHER.

The code categories emerging from dataset O were then placed in a logic matrix. This matrix (shown in figure 3.7 below) displayed roles of key participants within the named environments involved in the CHER care seeking experiences. Dataset I was then examined using this matrix; each interview's information was extracted onto a copy of the matrix template. A comparison of all 18 filled interview templates allowed an appreciation of the patterns of interaction represented within each segment of the matrix.

Once the matrix categories had been filled using all 18 interviews, evidence tracing a specific series of factors (for example participant behaviours and institutional features) to patient outcomes, began to emerge more strongly. This informed the framing of the discussion questions for the focus groups. The raw data for Dataset F consisted of four sets of transcripts from the fur groups. Detailed reading of the material from the transcripts allowed each set of responses to each question by each group to be summarised. As the same set of questions was used across all the groups, the summary responses from each group, to each question were available for cross-group comparisons. These responses allowed an appreciation of the directions of the group opinions about the effect of a named factor on outcomes.

At this stage, it was possible to highlight the factors which had traceable effects on outcomes from across all the primary data, effects which were supported within the three perspectives from the data. This was where a final set of eight factors were identified. It was now possible to compare the stated propositions of effect of factors derived from the literature listed above (section 3.7.1 Acknowledging the Theoretical Patterns of Interest from Literature) to the eight factors emerging from:

1. The summary statements about each child (created following the extraction of interview data onto the logic matrix into the 8 categories)
2. The summary statements from the focus groups regarding each group's response to each question examining the opinions on the effect of emerging factors (represented by the categories).

(The material which became the final 8 factors as they emerged from the comparison process are highlighted in figure 3.10 below using the Interview

template to show how even at that stage some of the categories had begun to emerge).

In summary, the data from all three datasets were treated in an interwoven process, which principally acknowledged the patterns of effect and outcome among factors from the literature. Thus, when empirical patterns were observed within the new observations, it became possible to focus the examination of the units for analysis (the interviews); simultaneously focusing the collection of complementary data (the focus groups) for further analysis. Ultimately, the emerging patterns across these datasets in the form of propositions could be compared and this process is illustrated in Figures 3.6 – 3.10.

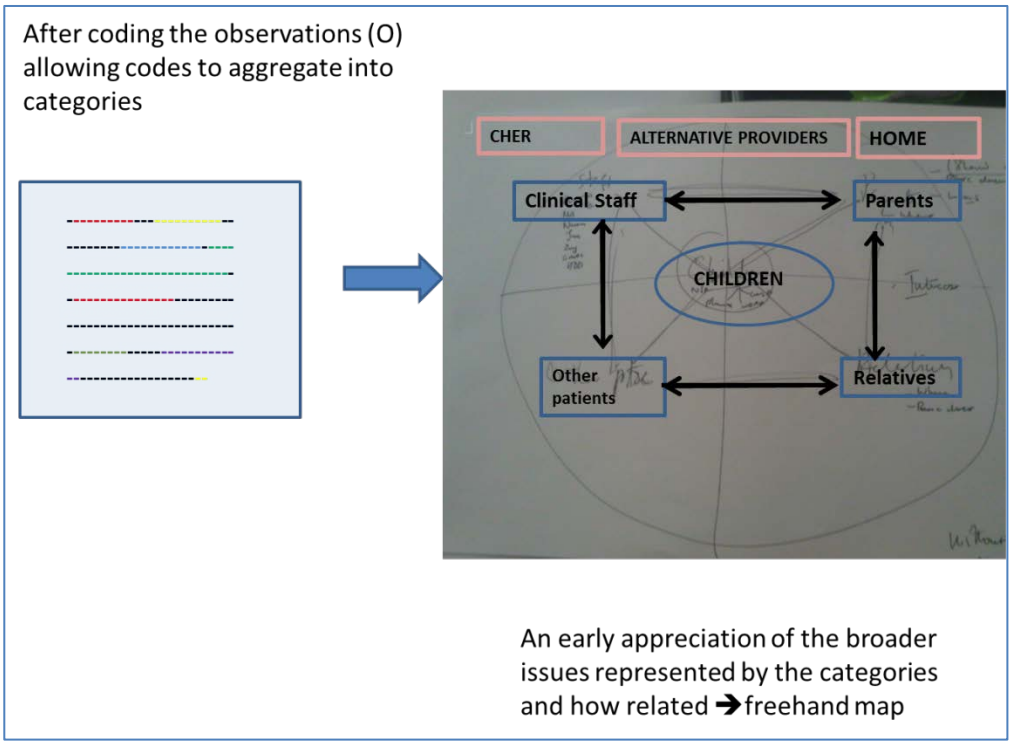


Figure 3.6: Free-hand concept development using code-based categories

The emergence of the matrix, appreciating how the environments and participants interacted over time

	Pre-illness	Current Illness	Illness in CHER→Outcome
CHILD	Background story of deceased child Background story of ill child Antenatal and Delivery histories Immunization histories Nutrition history	Main reason Child is in CHER Home remedies Previous medical treatment	Children in waiting area Children in Consulting room Children on admission descriptions Patient outcomes Cases brought to emergent attention
KEY PERSONS	Parents preventive intervention Parents Choice of ANC and Preventive care Neighbours Parental/Community culture and health beliefs	Parent HCSB Extended family Parental finances	Parent child interaction Parent observation of clinical status Doctor/ Nurse child interaction Support Staff interaction with parents Extended family Other patients
ENVIRONMENT	Home	Home Private Hospital Other Government Hospitals Chemist Home	CHER →Payment process →Wards →outpatients **Strike!!**

CHRONOLOGICAL PROGRESSION

Figure 3.7: Combining the freehand concepts from the observation data into a matriceal framework

Having identified key sub categories, these data were then extracted from each interview, where present.

Interview extraction format for each child-filled out from transcripts

	Pre-illness	Current Illness	Illness in CHER→Outcome
CHILD	Background story of deceased child Background story of ill child Antenatal and Delivery histories Immunization histories Nutrition history	Main reason Child is in CHER Home remedies Previous medical treatment	Children in waiting area Children in Consulting room Children on admission descriptions Patient outcomes Cases brought to emergent attention
KEY PERSONS	Parents preventive intervention Parents Choice of ANC and Preventive care Neighbours Parental/Community culture and health beliefs	Parent HCSB Extended family Parental finances	Parent child interaction Parent observation of clinical status Doctor/ Nurse child interaction Support Staff interaction with parents Extended family Other patients
ENVIRONMENT	Home	Home Private Hospital Other Government Hospitals Chemist Home	CHER →Payment process →Wards →outpatients **Strike!!**

Figure 3.8: Using the matrix to extract relevant data from the interviews

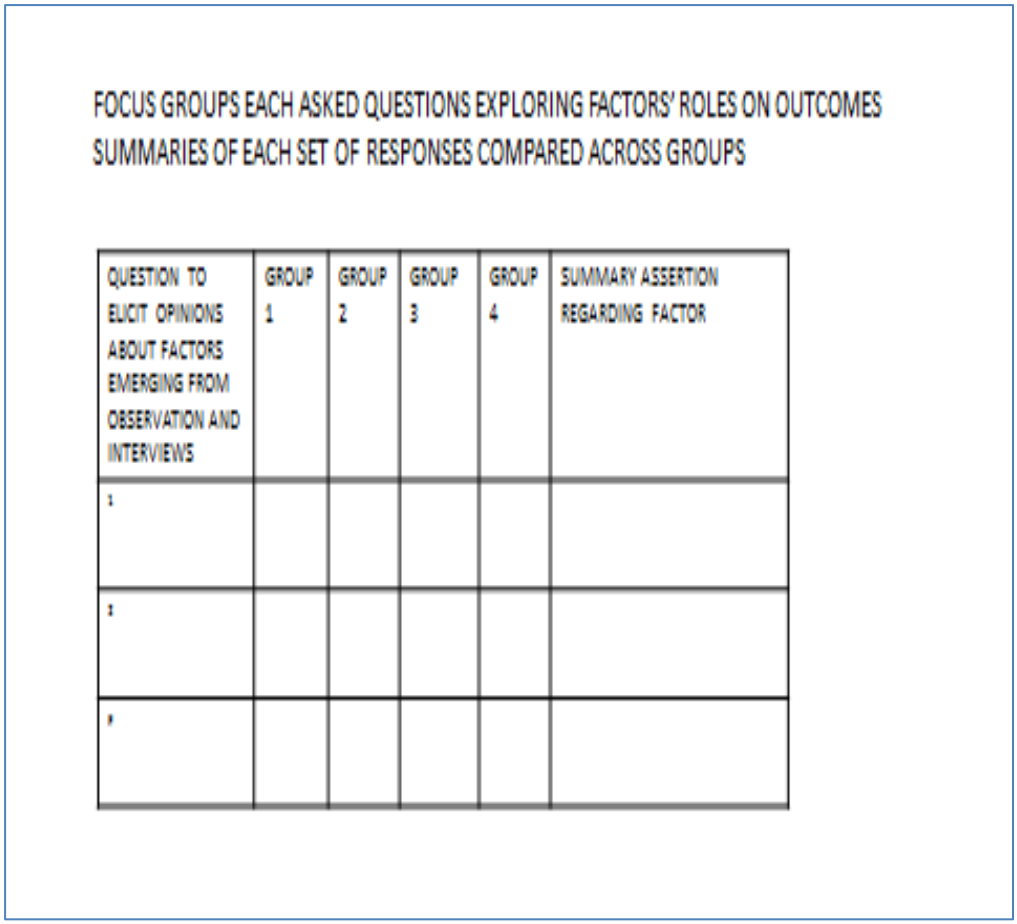


Figure 3.9: The emergence of summarised information from the focus group data

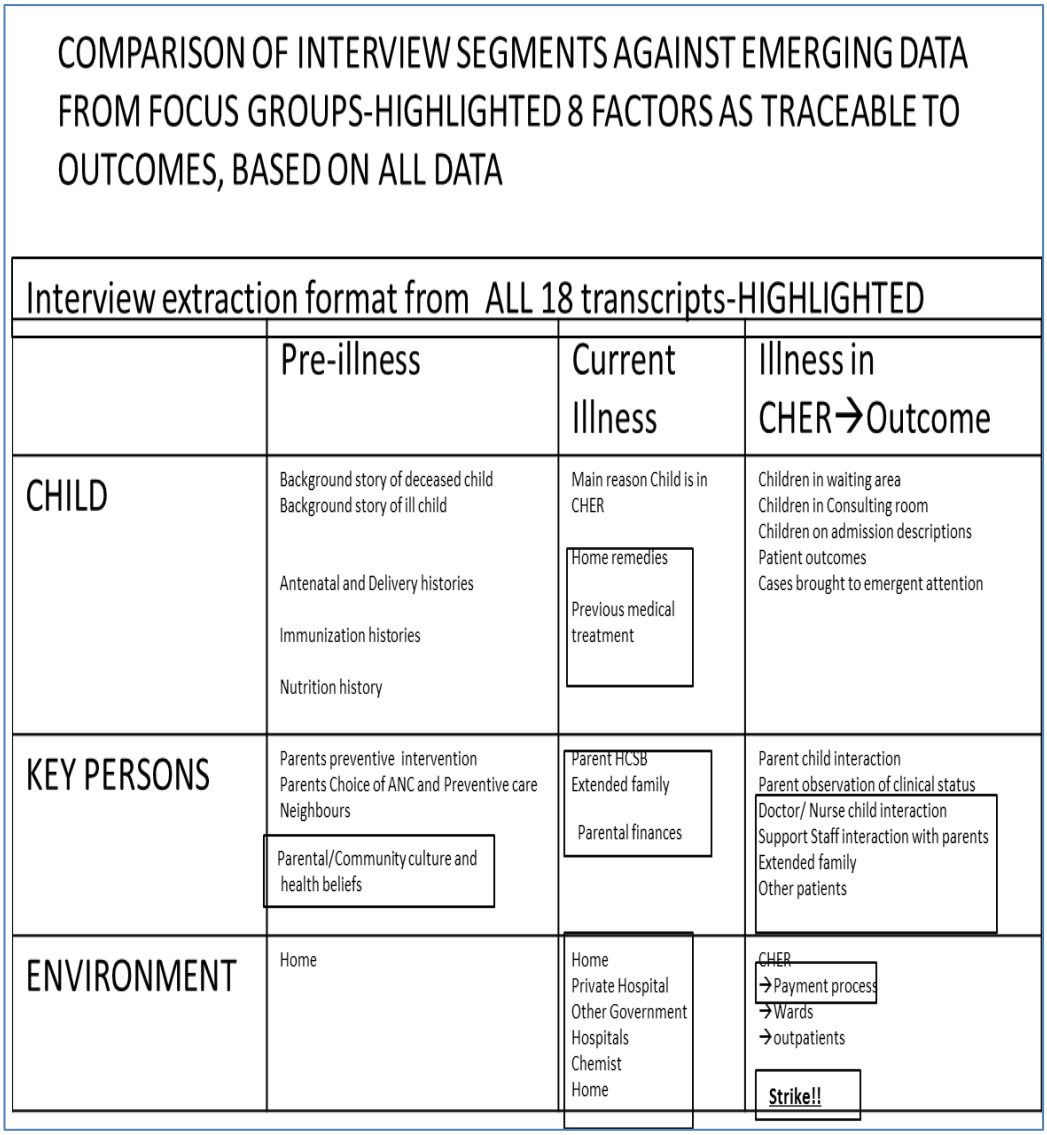


Figure 3.10: Showing how the final set of factors emerged from the data's final set of assertions of influence of specific factors, following comparison of interview data with focus group responses.

**This is displayed on the framework matrix of interview data.

The final set of 8 factors are as follows:

1) Home based self-medication (HBSM)

2) Care-seeking activity at private care facilities

3) In-CHER communication between parents and health professionals

4) Parents of low socioeconomic status

5) Placement of user fees' pay-points at the CHER

6) Extended family presence in the CHER

7) Pre-existing cultural beliefs about treatment modalities presented at the CHER

8) The effects of the doctors strike

These are treated in greater detail in Chapters 4 and 5.

3.7.3 Triangulation of Emerging Propositions on Factors in the Data

The access to these multiple sets of participants, resulting in multiple datasets (gathered from each group's perspective), was decided upon *a priori* and was strongly based on the value of the triadic principle of information sharing within paediatric consultations (Cahill and Papergiourgio, 2007). Handling the data required an acknowledgement that each set of observations, interviews and focus group transcripts, represented different principal viewpoints. Stake (1995) placed an emphasis on the benefits of different levels of triangulation within a case study towards greater internal validity. This study employed multiple data types, collection methods, and analytical techniques.

Earlier considerations of the combined perspectives were aimed at exploiting the mathematical concept of linear triangulation, where the convergence of multiple loci represents the centre point of the studied perspectives (Kelle and Erzeberger, 2008). Denzin and Lincoln (2005) and other experts believe that convergence on social issues within a phenomenon produce a valid final interpretation because each method serves as a check on the others' rigor. However, this has been debated

among social scientists because the social concepts being studied are not fixable in the same manner as mathematical loci. Through much debate, triangulation also accommodates the concepts of an appreciation of the complementary aspects of the studied phenomena, termed ‘complementarity’ (Kelle and Erzeberger, 2008, Guba and Lincoln, 1994).

This study used triangulation at the level of methods and analysis in order to build credibility for the stage during which these empirical findings would be used to challenge the theoretical and literature based assertions. Triangulating emerging categories within the data involved comparing them to one another. In each situation the assertions were considered first as to whether they served as confirmation or direct disconfirmation of the other dataset’s position, and their overlaps and differences were examined in detail. In this way, the study design was able to accommodate, and explain to a degree, the emergence of rival explanations to known outcomes (Hak and Dul, 2009).

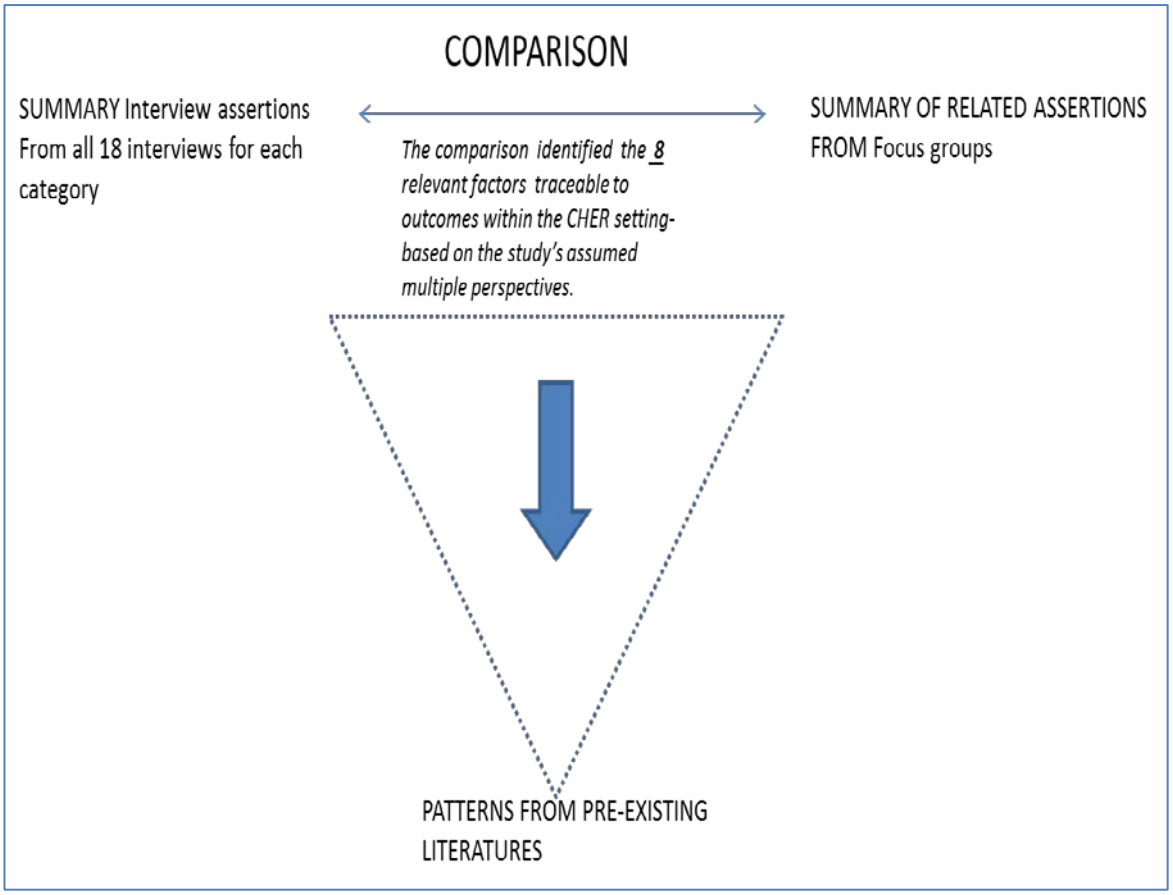


Figure 3.11: How triangulation in this study focused the final interpretation

3.7.4 Testing Emerging Propositions Concerning the Influence of Factors

In testing the hypotheses for the ultimate pattern matching present in this study, it became necessary to determine to what extent the empirical evidence supported the theorised associations towards the outcomes. The result of this testing phase was to see how the propositions either confirmed or disconfirmed any of the working hypotheses or components of the conceptual framework. A single case design is best suited to elucidating characteristics of the case itself, while multiple cases emphasise differences between cases. Therefore, this single case design was able to test propositions about the PEC process by exploring and producing a detailed

description of the compositional elements of the case. These were then compared against theoretical expectations of the process.

A stated concern regarding single-site case study research is focused upon the lack of generalisability of the findings beyond the immediate setting (Noor, 2008) (Gilgun, 2001, Yin, 2009). This case explored a named setting and had no aspirations towards generalisation in the positivistic sense. Both Gilgun (2010) and Yin (2009) specifically argue that case studies should not attempt to generalise their findings to apply to the wider population. Instead, the case study should be seen as generating hypothetical propositions following a theory-led examination of a particular phenomenon. This study stated specific assumptions about the factors which were implicated in producing PEC outcomes, and this highlighted ways in which the outcomes and factors identified from the data conformed or deviated from the initial theorised patterns.

The use of a single-site meant that any departures from the expected patterns were not statistically generalisable, but rather were equipped within the case's context to proffer evidence of a critical characteristic of the studied setting and warranting further multi-case exploration. Disconfirming assertions occurring in this case study would highlight how this setting varied from wider patterns; knowledge which could be vital for making viable recommendations for intervention and policy development within the local context.

3.8 Addressing Internal and External Validity and Reliability

The research question presented an attainable research goal; examining the experiences of children in emergency care. The data collected and utilised for this

purpose was comprised of a combination of information emerging from daily routine, as well as direct inquiry. Qualitative research designs placing an emphasis on the interpretation of multiple perspectives from accounts or narratives, are said to improve the validity of a study relative to single viewpoint studies. This is re-enforced by the explanations showing how triangulation contributes to validity offered earlier in this chapter.

The internal validity of qualitative research expresses how well the research question fits the data collection and strategy employed for analysis (Creswell, 2007, Merriam, 1998, Yin, 2009). Furthermore, Yin (2009) placed a greater emphasis on internal validity; how the search for an explanation depends on the conclusions drawn from the description of the processes being explored, rather than on the 'external validity' which describes applicable the findings are beyond the boundaries of the case studied.

The current study demonstrates study reliability according to Yin (2009) at it includes detailed replication and an audit trail of study protocols. This study was not designed to be generalised beyond the current context and this resonates with the growing understanding among case study researchers that establishing generalisability does not serve as a guarantee of rigor within qualitative case study research (Creswell, 2009, Creswell, 2007, Creswell and Clark, 2007, Merriam, 1998). Indeed, it may invalidate useful conclusions where the study's interpretation is extended beyond its remit, merely to meet such a goal.

Due to the confidential nature of much of the data of this study, access to the data and the interim research findings to CHER staff was restricted in order to protect the participants' confidentiality. However, it was important to acquire some measure of

external evaluation of the degree to which the field reports represented the participants' experiences in order to gauge how their experience reflected the context (descriptive validity), individual meaning (interpretive validity) and purpose in participation (theoretical validity). In other words, to test whether the researcher had truly done what was expected (Sandelowski, 2008).

It was for this reason that the managing consultant of the CHER was involved in anonymised post-group debriefing sessions, during which issues were recounted thereby allowing input on whether the questions, emerging as they did from observation data, had been clearly stated, were relevant and understood. In addition, a question during the focus groups enquired about the adequacy of the group questions in allowing the professionals to fully express their key concerns about PER mortality. This allowed free input and probes were instituted to elicit participants' opinions regarding potential applications of the research at the CHER.

3.9 Chapter Summary

The experiences of children admitted to the CHER LUTH constitute a considerably more complex social construct for exploration than previously acknowledged in the literature from developing countries on PEC outcomes. The complex interplay within the PER and the eventual outcome of care cannot be fully appreciated from a singular vantage point. The study involved a search for deeper meaning by examining the experiences, descriptions, perceptions and opinions of selected participants through the constructive lens of a non-participatory observer.

The preceding chapter emphasised the change needed to the existing cross-sectional approach to evaluations of mortality risks in PEC. The case study design used available data to explicate the mechanisms of mortality as they occurred. Thus

the case study was formed within the constructed reality of children's experiences in the confines of the emergency care facility.

A purely qualitative approach was rejected in this study due to the established role of statistically provable associations in mortality causation, as espoused in the selected theoretical framework. The invaluable contribution of existing patterns of patient outcomes towards contextualisation was also considered, as examining the events without acknowledging the pre-existing patterns could have rendered the study chronologically irrelevant for future applications in that setting.

This chapter outlined the methodological processes undertaken in the current study, as well as potential dangers to the study's methodological quality regarding validity (internal, external). The analytical process used in the reduction, display and interpretation of the qualitative data has also been described, through to the production of the final themes for interpretation. The deficiencies in the generalisations of single site case studies were discussed against the techniques used in this study to overcome them, including triangulation within data collection and analysis, as well as analytical generalisation.

Ethical issues which arose for this study, as well as techniques and measures taken to ensure confidentiality within the data collection processes were outlined ensuring anonymity. Finally, although the study lacked multiple analysts for the primary data analysis, other means of validating both the data collection and analytical processes were described.

Chapter 4: Results and Research Findings

4.1 Introduction

This chapter presents the findings of this study as they emerged in order to answer the research question posed in Chapter 1. Following a brief summary in this section of how the findings emerged from the study, the Chapter is divided into two main sections presenting:

1. The broad demographic patterns in the CHER in order to allow a further appreciation of the prevailing patient flow patterns, highlighting similarities and differences with established patterns within the limited interpretation available from the purposeful sample used.

2. An exploration of the empirical findings from the analysis of the qualitative data, which led to the identification of eight factors with traceable influences on the patient outcomes at the CHER.

As explained in Chapter 3, the research objectives directed the collection of primary qualitative data for analysis. These data were composed of text from interviews, direct observations and focus groups. Using these different sources provided the multiple loci for the triangulation of viewpoints and perspectives needed for a rigorous examination of the experience of the PEC process at the CHER. From this, detailed descriptions of factors contributing to patient outcomes emerged, allowing their roles to be better appreciated within the boundaries of the case.

The analytical strategy was grounded in acknowledging the pre-existing influence on PEC-based child mortality by multi-level social, biological, and organisational

factors in developing countries. The principal analytical task was to examine the collated data and become aware of the existing process and factors emerging as salient among the CHER population. It was only after this that their influence on PEC outcomes could be traced and then compared to the theoretical patterns of influence.

Using a cyclical approach to the data, the analyses allowed the observation data, the method employed across the broadest range of participants, to be examined inductively, letting codes emerge which told the story about the participants themselves, and the routines and practices leading up to, and then focused, in the CHER. This process encouraged categories to be formed from these codes, leading to an empirical framework matrix which highlighted key nodal issues in segments representing the interactions between study participants and the different relevant environments leading up to and including the CHER.

The framework was then deductively applied to the parental interview data which served to highlight the dominant and recurring issues across those framework domains evident in both sets of data. This process served as an early stage in illustrating how the segment information began to coalesce into categories reflecting the relationships within the portions of the cumulative and individual experience of their child's illness, as observed within the boundaries of the study.

The focus group data set was then used as a triangulation focus, where the responses to questions based on the framework segments identified health professionals' opinions on those issues. The responses when placed against the information from the first two datasets, and this served to highlight the categories of

relevance to all the data. From this, eight distinct broad overarching themes were identified as factors traceable to outcomes at the CHER.

The following section serves as an introduction to the children at the CHER as a distinct population within the routines of a PEC facility over the period of time of the study. Beginning from a descriptive introduction of a typical scene in the CHER, the section explores patient demographics and outcome patterns. This was achieved by using both the pre-existing and opportunistically collected demographics about the children attending the CHER.

These quantitative descriptions were included due to the importance of having this case study situate the qualitative evaluation of the CHER population's experiences within a detailed appreciation of the dynamic, contemporary routines at the CHER. This section thus allows us to gain an understanding of what had happened to the children within their first 24 hours of care, which is underpinned by a familiarity with the broader patterns of attendance for care at the CHER. I believe that this provides an essential background for underscoring the value of the involvement of each child attending, thereby emphasising the importance of seeing them both as individuals and invaluable members of the wider population attending the CHER.

4.2 A Child's Journey through the CHER

4.2.1 A Typical Morning….

> *All around the main doors of CHER there are groups of people carrying children. Many of the people have recently been evicted from the waiting area. The 'one child/one parent' policy is being enforced today. Just through these*

doors to the left are four sets of wooden benches, fully occupied with (27) people, holding their children.

Overhead in the waiting area, the electric ceiling fan is whirring loudly. One of the security guards waves at me as I walk past and shakes his head in the direction of the benches and mentions how glad he is of the fan, as it is a very warm morning (average temperatures in Lagos at this time of year are between 32 and 35 degrees Celsius). Some parents are sitting beside their children - a few are using makeshift fans made from newspapers or cloth - to supplement the effects of the electric ceiling fan. Of the 27 people seated, 11 are children; 17 are adults, eight of whom are carrying their children; three of these (the youngest) are in slings across their mothers' backs. The house officer responsible for triage Dr BEL is working her way towards the bench and I greet her a "good morning". She smiles and begins talking to a woman who begins adjusting her sling to allow the doctor a better look at the child. As I glance towards the Main corridor inside the CHER, I can see the relatives of those already on admission moving between the nurses' station and the wards- purple-clad nurses are going about their duties, some chatting quietly at the nurses' station.

---From Fieldwork Observations September 2010

The children attending for care at the CHER were transported there by means of private personal and hospital transport. These services largely ended for the children at the security doors of the CHER at LUTH. The security team on duty identified the responsible parent or attending health worker, examined the referral document(s) presented and seated them in the waiting area. The triage nurse/house officer then determined which child was most urgently in need of the next available consultation

by the doctors on duty. The remainder of the patients and their parents would then be asked to await a less urgent consultation slot, after which some would be referred onwards to out-patients or be admitted for in-patient care.

Following entry into the consultation room, a child would be ‘clerked’, which took less than 10 minutes for each child. The clerking process involved the doctors engaging the attending parent/caregiver in a clinical interview, which was followed by physically examining their child. At the end of this process, parents were advised of the clinical decision regarding their continued care at the CHER, which involved registration and an admission decision for in-patient care. The decisions to place a child in one or other clinical administrative roles were made here. These roles relative to the CHER were recorded as outcomes depending on the time period during which the child was being observed.

For the study where the 24-hour status was under examination, the outcomes included:

1) Undesirable outcomes: DAMA and deaths.
2) Desirable outcomes: these involved clinically determined administrative placements, such as admissions to in-patient care at the CHER on the main lying in wards, transfers to other hospitals or the out patients’ clinics.

This study was uniquely placed to observe a unique disruption to the intake patterns at the CHER due to a 6 month-long strike action undertaken by doctors working in all Lagos State administered clinical facilities. The absence of these facilities, including PEC and other care, meant that in the entire state only the CHER was open and functional for all PEC needs for that period. The primary effect to intake patterns was an initial rapid rise, of which was followed by exhaustion of both

the CHER and ward-based bed-spaces. This resulted in a backlog effect, with the widespread boarding of patients within the facility at the CHER, resulting in limited spaces being available for new admissions. Admissions were eventually allowed based on the availability of age-appropriate bed spaces in addition to clinical status.

During the period of the field work for this study (September 2010 - March 2011), the researcher attended for the purposes of the study a total of 24 days at CHER. In total, 99 children were observed while on admission at the CHER, 18 of who were followed through to the end of their first 24 hours in care and whose parents consented to full-length interviews. In addition, four focus groups were conducted with members of the main cadres of staff involved in the primary clinical team at the CHER.

4.2.2 Comparing the Demographics among Children Attending the CHER for 2010 with the Study Sample of 99 children

A comparison of the proportional distribution of children by LGA of residence of the study participants against those attending in the previous half-year period (June-December 2010) showed that the highest proportion of children attending the CHER lived in the three LGAs geographically closest to the LUTH: Mushin, Surulere and Lagos Mainland (Figure 4.1). Therefore, it was considered that the study had managed to capture a fair representation of normal attendance by LGA.

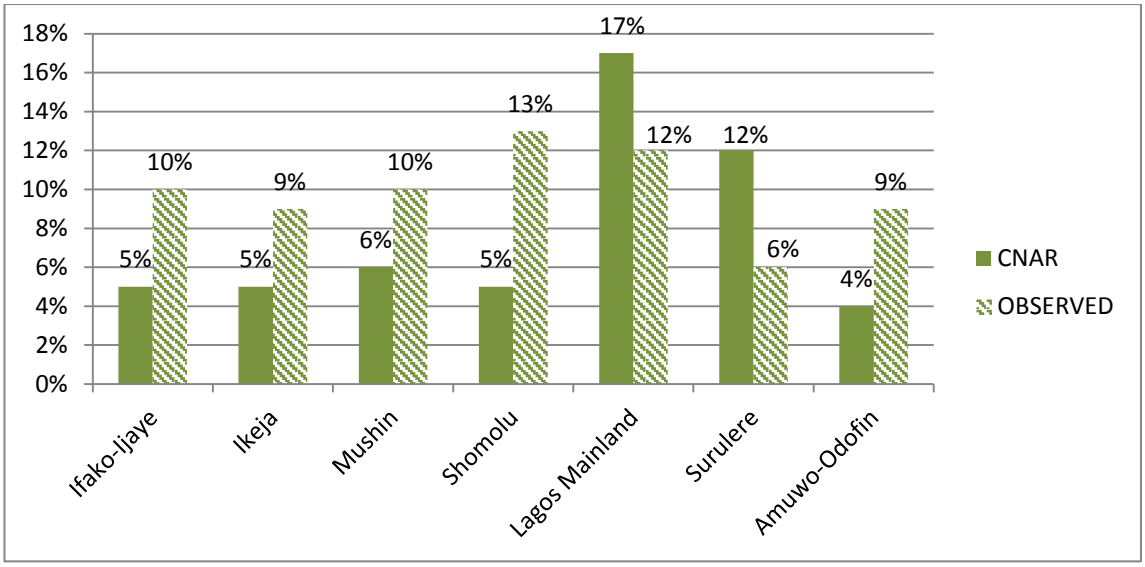


Figure 4.1: Percentage attendance from across the seven Lagos LGAs with the highest proportion of attendance for the 99 children observed compared to the records for June-December 2010

A comparison of the gender and age percentage distributions of the children observed during the fieldwork with those recorded for June-December 2010 showed, in both samples, a higher number of males attending; among those observed (Male 67%;Female 33%) and the existing records (57% male; 43% female)-see Appendix D for Table 4. Among the observed sample, there was a predominance of attendance among infants aged 1-12 months; different from the neonatal predominance recorded previously. It is essential to state here that these differences in demographics should not be interpreted as having any proportional significance, as the study sample was:

a) Not meant to be numerically representative of the CHER
b) A purposeful sample
c) Collected during the disruption to attendance patterns as a result of the doctors strike.

The disruptions due to the strike resulted in the downward trend in attendance within the CHER records from the month of October –please see Chapter 1

(specifically figure 1.11: Outcome distribution over the period between June-December 2010).

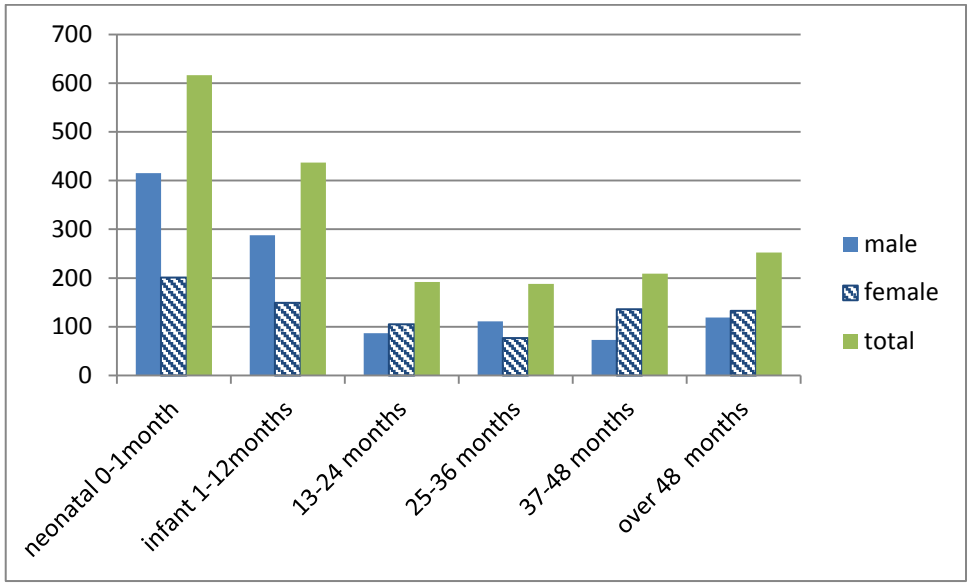


Figure 4.2: Distribution by age group and gender among children attending the CHER from the records for June-December 2010

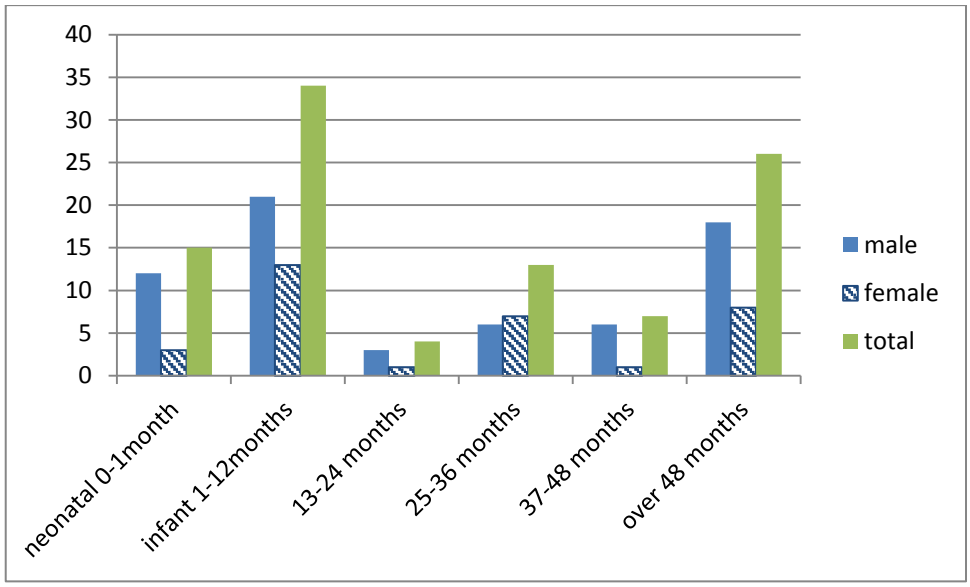


Figure 4.3: Distribution by age group and gender among children among the 99 children observed as part of this study

4.2.2.1 Comparing Existing Outcome Patterns with the Observed 99 Children's Outcome Patterns

The outcomes recorded by the CHER admission record database described the child's administrative designation at the end of the period of interest. The outcomes measured at the CHER during the study were designated to mirror the type of recording available in the central nursing records to enable comparisons as far as possible. The outcomes where a child had survived and could be accounted for within the care structure of the CHER were considered 'desirable', while the 'undesirable' outcomes, were death and DAMA.

A comparison of the recorded outcomes for the 99 observed patients in the 24 hours following attendance at CHER against those recorded for the half-year June-December 2010 are presented in Figure 4.4. From this it can be seen that within the observation sample, the highest proportion of children at the 24 hour point were those admitted to CHER, followed by those discharged home and referred to other hospitals/outpatients clinics for care. This is somewhat different from the established patterns for CHER for the previous half year where the majority of children were, by the 24 hour point: discharged home, and admitted to the CHER, followed by the proportion discharged against advice and those transferred to the out-patient care.

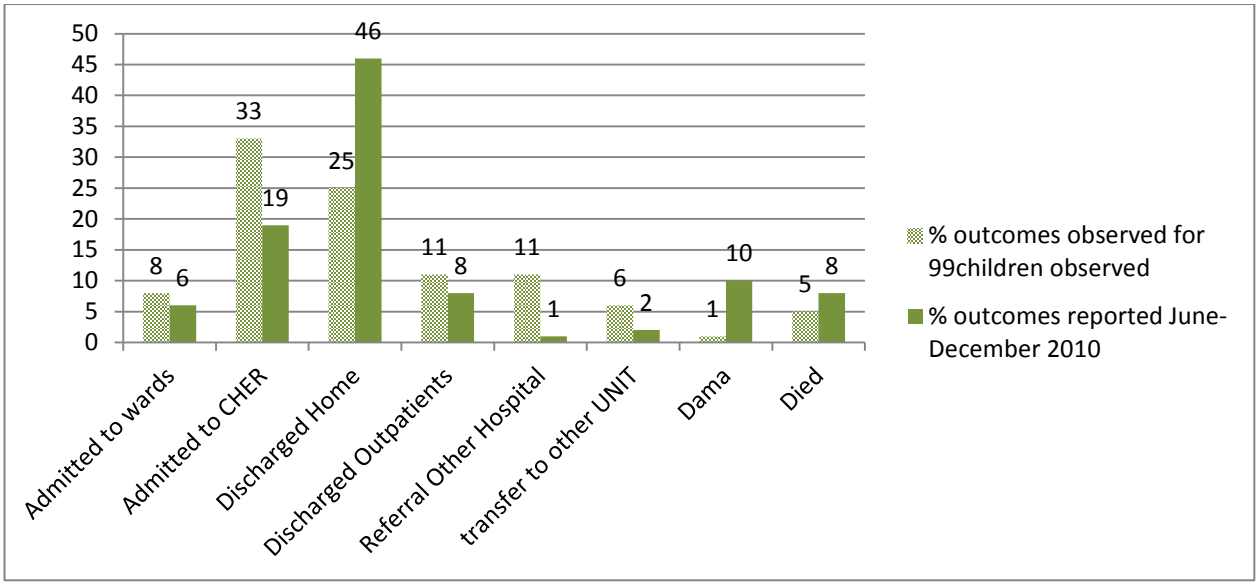


Figure 4.4: Comparison of percentage outcomes within 24 hours of attendance for the 99 children observed against the attendance for June-December 2010
Percentages are rounded up to the nearest whole digit. The summary table of the 99 children's outcomes is available in Appendix D, Table 2; the percentages are available in Table 7 of the same appendix.

Although the proportion of children admitted to the CHER in both samples was among the highest fraction, the distributions showed an increased throughput to other hospitals and home. This co-existed with a rise in admissions to the CHER, a pattern is at least partially explained by the Lagos doctor's strike which resulted in a higher demand for the CHER services, raising daily attendance over the period observed by the study. As explained previously, the rise in admissions was soon stalled by space limitations at the facility, which led to boarding and the facility's need to turn patients away, hence the rise in transfers/referrals to other hospitals. Thus in this study the nature of the 'referral to other hospitals' fraction became less of a desirable outcome as it implied that a child did indeed need the CHER's care, but the facility was over-subscribed at that time. Consequently, the outcome was not considered necessarily desirable or otherwise, and for the sake of interpretation within this

setting, it was qualified as a 'grey area' outcome. Please see Table 4.1 to see how this designation places this outcome against the others.

Regarding the cause of death patterns: the June-December 2010 patient data showed the death rate for the entire period was 8.2%, (127 deaths) of these 70.8% occurred within 24 hours of admission to the facility. This proportion compares with previous literature from the same centre as Fajolu and Egri-Okwaji (2011) reported an 11.1% mortality rate. Their proportion over a full year's admissions (4013) is comparable to the 2010 half year admissions (1894) in spite of the latter's understandable loss of admissions due to the Lagos Doctor's Strike described earlier. The chief causes of death within the first 24 hours (June-December 2010) were severe birth asphyxia (16%) septicaemia (14.8%) neonatal jaundice (13.6%) and malaria (10%) (as shown in Figure 4.7). Figure 4.5 shows the age distribution for deaths recorded between June-December 2010, with the majority (53%) being neonates, followed by the 1-12month age group (29%).

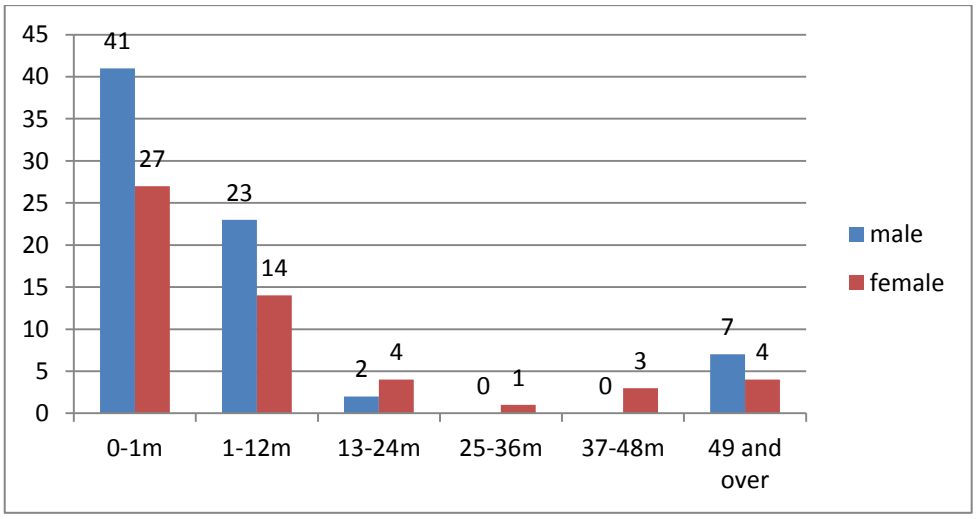


Figure 4.5: Age in months (m) and gender distribution of the 127 children who died following admission to CHER between June and December 2010

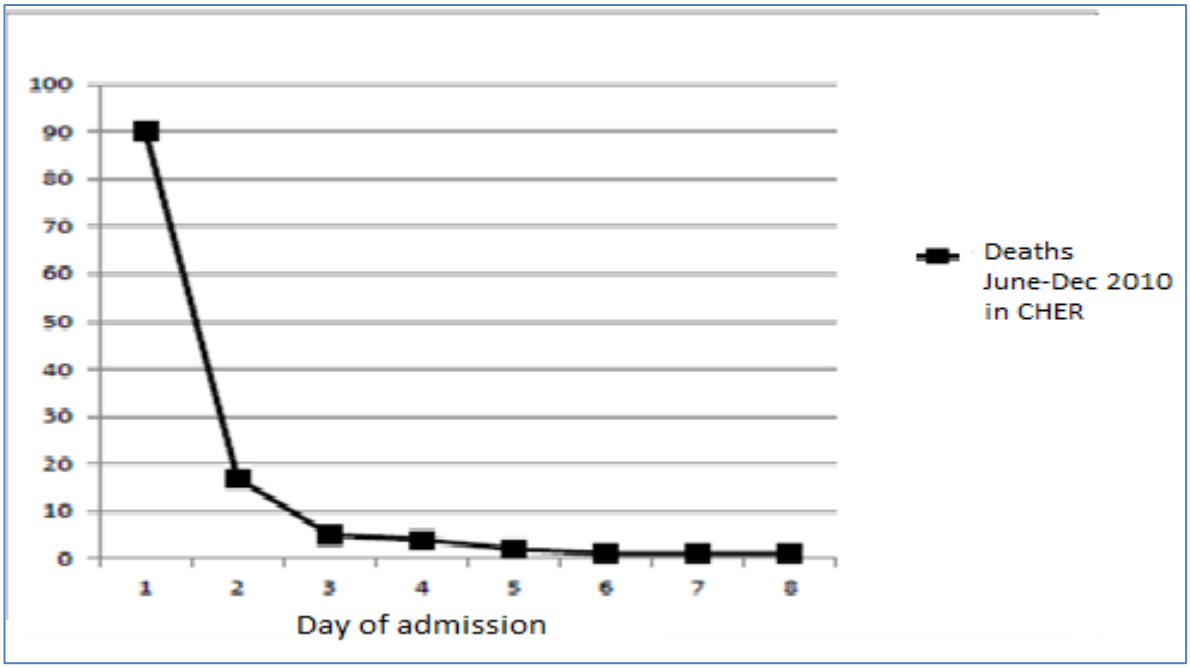


Figure 4.6: Distribution of mortality (127 deaths) by day of admission for deaths from the records for June-December 2010

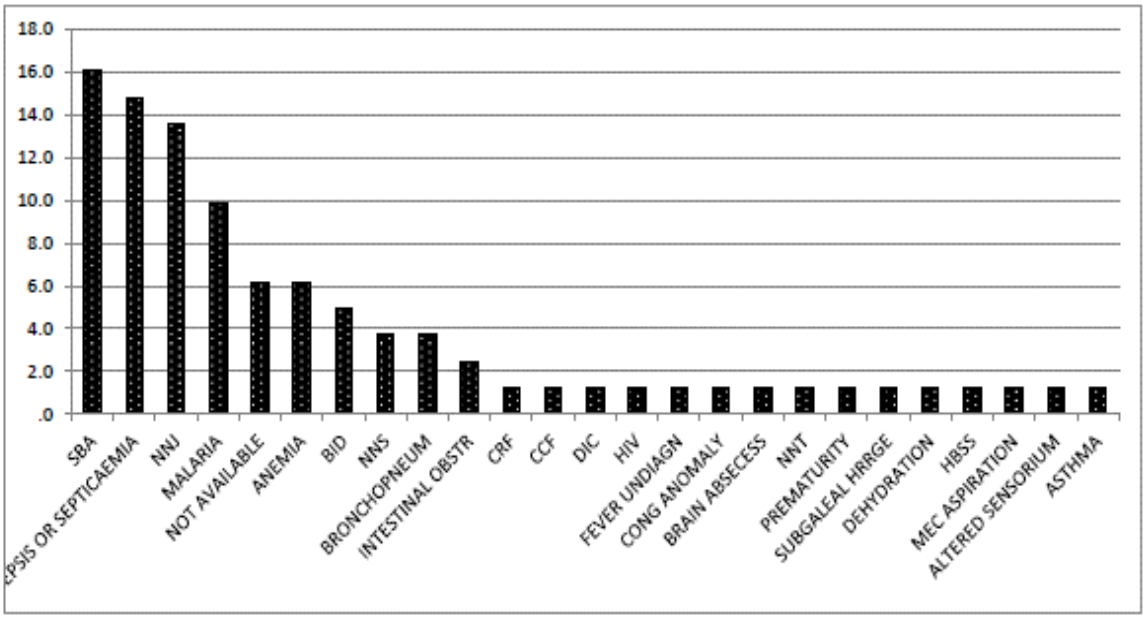


Figure 4.7: Percentage distribution of diagnoses for deaths with 24 hours of admission from the records for June-December 2010

Among the 99 observed children, the working diagnoses were distributed as shown below in Figure 4.8 (The complete table for this is in Appendix D Table 1). The commonest were Acute Respiratory infection (14% of cases), Children sent for surgery (13%), Malaria (10%) and Meningitis (8%). This distribution reflects the previously reported high contributions of infectious disease to the PEC burden in this region, especially Malaria (Liu et al, 2010).

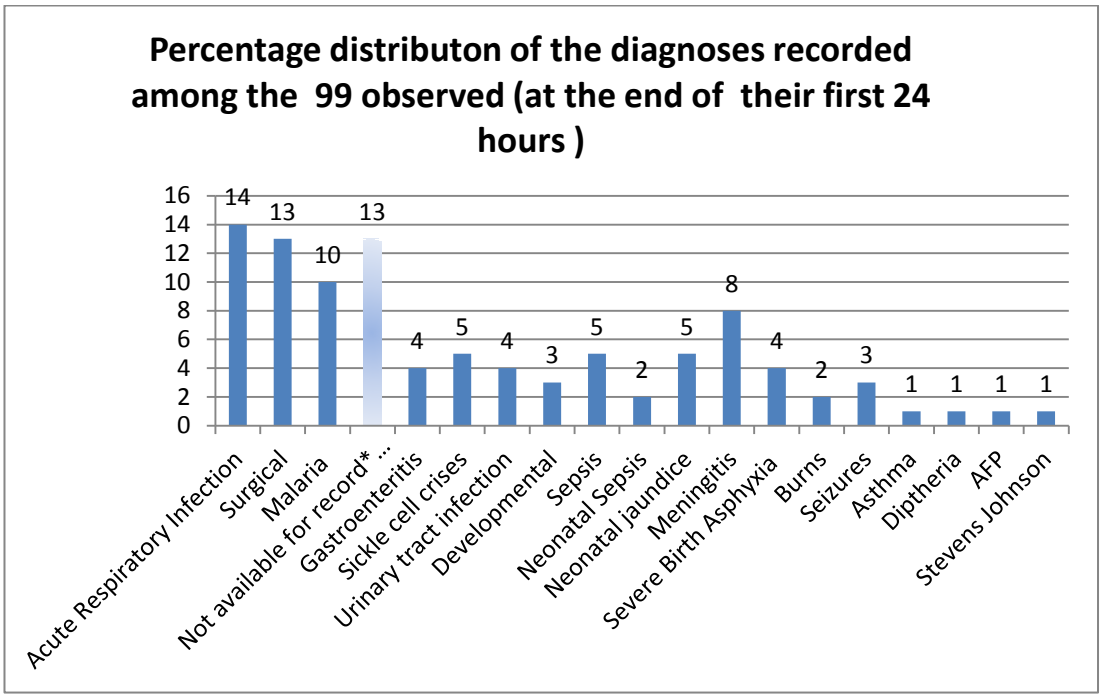


Figure 4.8 Percentage Distribution of Diagnoses among observed 99 Children

Unfortunately, no comparison data for the CHER for 2010 (all diagnoses-not merely fatalities) were available. The compilation of these data are ongoing and as such it was unavailable when requested (Oshinaike, 2010). This limitation is also observed in Fajolu and Egri-Okwaji, 2011, where only causes of death diagnoses are provided). For this study however, it is essential to state again, that the study's sampling process was not meant to be numerically representative of the CHER

Among the 99, there were five fatalities: four deaths following admission, and one child "brought in dead" occurring within 24 hours of admission to the facility. The causes of death were cases of sepsis in two male children aged 5months and 5 weeks respectively, two cases of neonatal jaundice among female neonates-one of whom was the child brought in dead- and a case of Steven's Johnson Syndrome in a 5 year old boy. (These children are treated in in further detail in section 4.2.2.3 The Children who Died During the Period of the Study; where available, this section provides reference to Vignettes with additional information in the Appendix D)

4.2.2.2 The Children whose Experiences were shared in Greater Detail - the 18 Interviewed Parents

> *As I look around, it is difficult to decide whom to question. Within the waiting area, parents look tired; expressions are either worried or just blank. The consulting room looks frenetic, the 2 doctors consulting simultaneously, while relatives look on, one child is on the examination couch, he isn't being examined, a nurse has placed him there while a bed-space is being prepared. While I consider starting at the wards, it occurs that those parents and children have been here for some time, and the interview may be less disruptive for them.*
>
> *--From Field note Reflections September 2010*

The parents and children were purposefully selected during the observation sessions and information was provided and consent obtained. Selection criteria were as follows:

a. Early enough in their time in the CHER to allow the researcher to acquire as much information about a child from the use of both observations and direct questioning during interviews.
b. Late enough to prevent the interview from being an inconvenience.

The resulting information was analysed as described in Chapter 3, examining issues emerging as salient about their PEC experiences from the early coding of observation data, and informed by the literature and conceptual framework.

From these interviews emerged profiles about the children, identifying their family's socioeconomic status, opinions and practice regarding acute illness, and how they engaged with PEC, and the key findings are examined later in this chapter. Case vignettes from each interview conducted in this study are provided and serve as reference material. They represent material from the interviews which inform on some or all of the key factors identified during the analysis. Direct excerpts from the interviews illustrating the core portions of these factors are referenced to the relevant vignette provided in Appendix D. These vignettes provided a means of appreciating the summary experiences of these children and are referred to in order to highlight key issues arising within the interviews.

4.2.2.3 The Children who Died During the Period of the Study

"Nobody wants to be the one whose child dies in LUTH, but it happens all the time, for us we see it everyday"

-- From field note observations, Conversations with the Chief Nursing Officer, Oct 2010

During the period of the fieldwork I interacted with five parents whose children died within 24 hours of coming into the CHER; the recorded outcomes were 4 deaths

and 1 '"brought in dead', and all of these children were less than 5 years of age. On request from a key member of staff at the CHER, the parents of the child who was brought in dead were only observed, and although their conversations were included, follow up contact for a fuller interview was not encouraged. The other parents were consented and interviewed as part of this study and short summaries of these children's progression to their final outcome are provided below, with additional details available in Appendix D.

BKR was a 5 week old boy who developed sudden severe vomiting accompanied by a fever and loss of appetite overnight (signs of sepsis) and a respiratory illness. He was reportedly taken to a private hospital the next day where he spent one night being treated and observed by the clinical team at this hospital. The clinicians referred him the following day to the CHER where he died within 24 hours of presentation. Further details about him are available in Appendix D, Vignette 10.

SJB was a 5 year old boy who had been treated at home for a sudden onset fever using an antimalarial regimen involving Chloroquine® when he developed severe itching on the first day of treatment. His parents contacted a nurse who lived nearby who made a house visit and prescribed a local brand of antibiotics, Rosiclox®, and oral antihistamines. Three days later the child had developed multiple boils (furuncles) on his torso. The nurse, on a follow up visit, recommended further antibiotics and sponge baths. Overnight the child experienced widespread blistering of the boils and the family on the recommendation of their family doctor (whom they consulted briefly) presented to the CHER. The child was accompanied by his parents, two uncles and an aunt. The child's care was prioritised by the admitting Triage Nurse on arrival at the CHER and he was admitted to the paediatric in-patient wards for care, spending less than 2 hours in the CHER post-presentation.

Unfortunately, he later died on the wards within the first 24 hours of admission. Further details can be found in Appendix D, Vignette 9.

CWDB (the only interview conducted with the parents after their child had died) had been referred from a private hospital with a week-long history of fever and the parents were referred from their local CHC on the second day of the illness. According to his mother, he required oxygen as part of his treatment which was not immediately available. He eventually died within the first 24 hours of admission whilst still in the CHER. His mother was very distraught, stating that she believed he could have been given better access to oxygen therapy, as his allotted supply was exhausted earlier than prescribed and the hospital-wide shortages delayed access to further supplies. The child died without receiving further oxygen, and both parents vehemently declined autopsy. Further details can be found in Appendix D, Vignette 11.

Neither of the parents of the two remaining fatalities (both female neonates), the child who was brought in dead (with neonatal jaundice) and a child who presented with complications of neonatal jaundice and who died within an hour of admission, were interviewed. Regarding the child who with the complications of neonatal jaundice, who died after admission, some parts of the Chief Nursing Officer's conversation with her parents conversations were included as part of the observation narrative after obtaining written consent.

4.3 The Eight Factors which Emerged as Influential on PEC Outcomes at the CHER

As shown in detail in Chapter 3 and in the summary recap in the introduction to this chapter, the analysis of the data from CHER following coding, led to the

derivation of sub categories and related categories within the emerging framework. This framework presented nine segments of aggregated categories from the original sets of codes. The framework highlighted how the most informative codes emerged as those intersecting between participants and environments across the stages of PEC within a child's current illnesses. In other words, key behaviours, practices and key location features across the collective experiences formed the thematic segments of the framework. When these were examined chronologically, eight main factors emerged across the data with a traceable influence towards the PEC outcomes. These eight factors are:

1) Home based self-medication (HBSM)
2) Care-seeking activity at private care facilities
3) In-CHER communication between parents and health professionals
4) Parents of low socioeconomic status
5) Placement of user fees' pay-points at the CHER
6) Extended family presence in the CHER
7) Pre-existing cultural beliefs about treatment modalities presented at the CHER
8) The effects of the doctors strike

This listing of the factors acknowledges their chronological placement in the PEC experiences from the CHER. The following section explores each of these factors in detail by:

a) Introducing the principal factor and describing the roles of these factors using the data and where available the pre-existing literature.

b) Describing how the assertion of influence was determined for the named factor.
c) Using direct excerpts from the textual data, comparing both supporting and contrasting perspectives in order to establish the strength of the validity of each factor's impact on the PEC outcomes as implied.

This presentation structure was selected to provide a consistent account of the nature of each of the factors pattern with which to compare the earlier evidence/theorised influence on outcomes.

Each identified factor was described both in itself and its relationships with others, and in how it affected/influenced the CHER PEC outcome, as well as where it potentially would be placed compared with the wider theoretical understanding of PEC outcomes. In this way each factor was thoroughly tested for its ability to answer the central research question posed. Table 4.1presents a summary of the identified eight factors, the outcomes they were traced as influencing within the CHER, and the mechanism through which the factor appeared to have contributed to the outcome. Table 4.1 also shows whether the factor's effect was mediated through causing a delayed progression through the PEC pathway, and provides suggestions based on the empirical evidence, as to whether they would be modifiable directly within the boundaries of the CHER.

Table 4.1: Charting the chronologically placed factors, the outcomes they influenced and the underlying mechanisms as highlighted within the study

FACTOR IDENTIFIED WITHIN DATA	MEDIATING MECHANISM BETWEEN FACTOR AND OUTCOME	OUTCOMES				CHARACTERISTICS OF FACTOR WITHIN THE PEC PROCESS	
		UNDESIRABLE-LESSER ODDS OF SURVIVAL		'GREY AREA'	DESIRABLE-BETTER ODDS OF SURVIVAL	DID THIS FACTOR RESULT IN DELAYED PROGRESS THROUGH PATHWAY	ARE ANY OF THE CONTRIBUTING MECHANISM COMPONENTS MODIFIABLE WITHIN CHER?
		DEATH	DAMA	TRANSFER TO OTHER HOSPITAL	ADMISSION/TRANSFER TO WARDS REFERRAL OR OPD		
Home based self-medication	Absence of drug safety awareness among population Cultural acceptance of "community prescribing" Access to over the counter medications	★	★	★	★	YES	YES
Private care	Relatively higher levels of public confidence in private facilities Absent enforcement of timely referral by private facilities Limited expertise at private facilities	★	★	★	★	YES	NO
In-CHER communication	Variable levels of provision of information to parents on : Existing institutional limitations Essential components of care protocol	★	★	★	★ 👍 👎	YES*	YES
Low socioeconomic status	Limited access to financial and social support	★	★	★	★ 👎	YES	YES
Placement of pay-points	Delayed user fee payment	★	★	★	★ 👎	YES	YES
Extended family involvement	Control of financial and social support for engagement with protocols at CHER In-CHER communication*	★	★	★	★ 👍 👎	YES*	YES

Pre-existing cultural beliefs about treatment modalities presented at CHER	Lack of awareness of importance of cher protocols relative to cultural beliefs In-CHER communication*	★	★	★	★ 👎	YES	YES
Lagos state strike	Increased demand on scarce amenities and space In-CHER communication*	★	★	★	★ 👎	YES	NO

Legend

★ Factor directly traceable to outcome

★ No traceable effect on outcomes

👍 Can enhance potential for desirable outcome

OR

👎 **Or**

Is a barrier to the desirable outcome

* Main factor in secondary role

4.3.1 Home Based Self-Medication

4.3.1.1 Introduction to the Factor

The literature supporting the design of this study demonstrated the importance of behaviours and attitudes in the home towards the initiation of HCSB. Belsky (1984) has identified how, among other multiple factors, the sociocultural development of parents themselves defines the nature of their interactions with their children. With regards parental attitudes towards illness, this involves the parents' perceptions of illness, and as a result, what actions are considered appropriate. The literature review highlighted the role played by parental cultural beliefs in the recognition of signs of illness in children and their subsequent behaviours and decisions taken at home, which precedes and determines the timing of entry into formal care seeking pathways. The literature showed that the home based level of intervention is an established part of the PEC pathway among developing populations.

From the coding of the observation data, this sub-category informed on the importance of treatment practices at home which parents engaged in following the onset/recognition of the onset of illness. When the interactions with the child and the key persons and environment were considered: home based self-medication practices (HBSM) emerged as the key issue in this portion of the PEC process.

4.3.1.2 Patterns of Practice among Parents

HBSM was reported as being the primary response following the onset of illness of their children among seven of the eighteen parents interviewed. Of these seven children, five were given non-prescribed orthodox pharmaceuticals, for example Chloroquine® syrup for 'suspected malaria' and vitamin C syrup for a 'fever' (further details provided in Appendix D). In the other two cases children were given

traditional African remedies, including ointment from a locally sourced palm-oil poultice which was used for one child with seizures, and an orally administered herbal mixture known locally as *'Agbo'* which was given to a child with a fever.

In spite of the fact that only seven parents self-medicated, among the 18 interviewed, there was an almost unanimous (17/18) acceptance of attempting either one or both of these forms of self-treatment. However, all the 17 parents when asked expressed a clear preference for orthodox medications over traditional forms, due to their concerns over the safety of the traditional medication. Seven of these parents had previously used traditional medications on occasions when their children were ill; however, in the illness relevant to the current visit to CHER, only two parents who were in support of both self-medication and traditional medicines had used traditional/herbal HBSM for their children.

A sub-sample of 9/18 parents were additionally questioned to establish what they knew about adverse drug reactions, and where they bought their medications. Only one parent was aware that death was a possible complication of using non-prescribed, albeit common, medications, and she was the wife of a registered pharmacist. The sources of the purchased medications varied from local chemist stores, hospital-based pharmacies and supermarket pharmacies. Of these, five parents used hospital pharmacies, two supermarket pharmacies and these parents were able to give the names of known registered establishments. The two parents using local chemists could not name the shop or answer whether the proprietor was a pharmacist. It was interesting to note that of these nine parents, the only two had not completed a secondary school education and these were the two users of local unnamed chemists.

4.3.1.3 Exploring Reasons for Parental Decisions to Practice HBSM

The practice of HBSM was considered quite acceptable by almost all (17/18) of the interviewed parents. The following excerpt, from an interview with a mother whose child developed a fever and who had medicated him with Chloroquine©, demonstrates this and presents some of the reasons behind the practice in her experience:

> *"Oh yes. I believe it is good to give them medicine in the house. Na all the time we dey say make we give them Chloroquine if dem get fever, no be so? This time oh I myself was surprised as the fever just continued, it should have come down so he could be fine. The sister and brothers all of them have medicine in the house, and if the medicine is left over... like now after the one he takes so, I will keep am for box. Lagos State give them for free, but who has the time to go to stand and collect new one, why? I have in the house not be so? The brother had fever not up to 2 months go now and the new one we buy that time we did not use all, so Aunty Researcher how I go thruway am? Myself, I like to buy medicine instead of Agbo sha, as per how do anyone know the real Agbo? (she winks and leans towards me).*
>
> *If na village Agbo now, dat na another matter, these* Lagos *Agbo people…but at the Chemist and GH they give you syrup or other medicine so I like them.(I ask if she doesn't believe Agbo works) Hey Auntie Researcher no be say Agbo no dey work!!!! E dey work (she laughs) and how much for small Agbo.. na kobo kobo money (pence literally, worth very little) . It is just that as I don't know the …ok like when people come from Village, like your Mother or Aunties. If one of them bring Agbo, ehen (she laughs) I will collect!! After all that is what we all used before in those days. But people don't come Lagos anyhow again (as often)...you understand ...until Christmas, That is if we ourselves don't 'carry go' to our own (her husband's family) Village."*
>
> From Interview with Mother of JWZM 7 m male child who presented with seizures and meningitis (Appendix D: Vignette 18*)*

One primary belief emerging across the parental responses was that they were aware of the correct treatments for common ailments, and could administer these at home. This attitude prevailed especially regarding the care of fevers, as shown in this supporting short excerpt from another interview:

"What is there in fever ehn Dockie? Simple matter of Nivaquine and tablets. Who doesn't know that? Who will not know Panadol for fever if it is not too hot? Abeg (similar to "please!" as she rolls her eyes) Hospital is for when it is serious and the child is not picking (not improving)."

From Interview with Mother of CC Baby 3 month old female infant presenting with respiratory infection (Appendix D-Vignette 2)

The first excerpt above also showed an acceptance of traditional medication as being effective. However, while the acceptance of orthodox HBSM appeared to emerge from previous positive experiences, traditional HBSM was supported with statements suggesting an underlying belief in the overt and implicit approbation of their immediate communities for the practice. These two short excerpts from the interviews with the mothers who used the medications show the use of *"they"* and *"the people say"* in determining their traditional/herbal HBSM:

"he has been having this convulsion since Wednesday last week I gave him palm-kernel oil to drink and rubbed it all over him...he calmed...that's what they use locally"

From interview with Mother of JWZM 7 ½ month old male (Vignette 18)

"as the sickness is getting worse, people there on the beach say to buy the Agbo"

From Interview with mother of L WZD five month old male admitted for sepsis (Vignette 7)

However all 17 parents in favour of self-medication, when asked, expressed a clear preference for orthodox medications over traditional forms due to their concerns over the safety of the mixtures. One mother specifically stated:

"am sure all these orisirishi (Lagos patois for various/medley/mishmash) work, but if I have drugs, me I will use them , yes now. Only for something you can't treat easily, maybe then, but for that you may need to go outside Lagos. Maybe even to the real heart of maybe Ogun or Oyo to see those <u>serious</u> Baba Alawo (herbalists/medicine men). But not for small fever or cough. I prefer pharmaceuticals, drugs rather."

From Interview with Mother of 'KLA' a nine month old female child who presented with malaria and gastroenteritis (Vignette 5)

An important additional incentive for choosing traditional/herbal HBSM which emerged, was the perception of lower costs for these medications; *"kobo kobo"* value as another parent stated, and their relative availability to a low socioeconomic status parent, for example a destitute mother living in a beach colony in Lagos.

> *"as the sickness is getting worse, people there on the beach say to buy the agbo [traditional herbal medicine concoction]..They (her neighbours on the beach) said "buy the agbo, it is here just with that women at Creek side. Just boil they said use pure water boiling to make the Agbo and use to bath him and give him little to drink. I no know whether PHC go even ask for money if I go so I do the Agbo, na small money, I dey wash cloth for the women before..so if she charge me, I go wash cloth."*

Interview with mother of L WZD five month old male admitted for sepsis (Vignette 7)

When explored within the focus groups, all groups of professionals unanimously expressed an awareness of the commonness of HBSM practice, which none of them supported. Reasons given for the practice were similar to those identified within the parental perspectives; belief that the practice was acceptable by the community and is appropriate:

> *"I think the biggest problem I think is that first thing, everybody in Nigeria is a "doctor". So a child falls ill, the mother first consults with her neighbour, she consults with her mother, with her uncle, with somebody here…"*

From focus group with registrars

Furthermore, the importance of this financial incentive among poorer parents was also emphasised:

> *"it is money for most of them! When you say "your child has fever" the woman will say "iba ah ma lo se Agbo fun se?(Fever, can we not just go and give him/her Agbo then?)". Not that they will end up saving, its penny-wise pound foolishness! The Agbo will be like N100, they will be thinking, "General Hospital registration N250, mi o le se (General Hospital registration for N250 (£1) I won't do it). Later when the child is seizing at home or taking N1000*

(£4) drip in one useless private place, they will say "E j ama lo LUTH (Let us go to LUTH"

From the focus group with the nurses

4.3.1.4 Exploring Reasons against the Use of HBSM

Eleven of the interviewed parents did not report self-medication in the instance which brought their children to the CHER, despite the fact that they all had either practiced it previously or been in homes where it was practiced. The excerpt below shows an example of this:

"What is there in fever ehn Dockie? Simple matter of Nivaquine and tablets. Who doesn't know that? Who will not know Panadol for fever if it is not too hot? Abeg (similar to "please!" as she rolls her eyes) Hospital is for when it is serious and the child is not picking (not improving). It is if I or the Daddy are able to drive to the GH when the sickness is just starting, maybe because it is weekend, otherwise I must try the drug at home. This baby girl now, she is small, and we have only one girl since we have been praying- so I came to hospital straight!! After trying our GH Ikorodu, they said Fashola and the GH doctors are fighting!,I did not waste time to drug her at home, after that we go private before we come from Ikorodu to here

Interview with Mother of CC Baby, a three month old infant female presenting with respiratory infection (Vignette 2)

This parent and 10 others, who had not pre-medicated gave situation specific reasons for bringing their child to the CHER. Of these, nine parents (CC Baby's mother and eight others) stated their reason for not self-medicating was that the child was too young, and for the two remaining children, one had seizures and was immediately taken in search of hospital-based PEC and the other was immediately referred to the CHER by an aunt who was herself a medical doctor.

The lone parent who expressly stated her non-support of the practice based this on her awareness of the points of safety due to a familiarity with pharmaceutical medications, as shown in the excerpt below:

"I ask 'do you self-medicate because your husband sells drugs? She replies "no we don't do that, Ah no, my husband is a Chemist, so we know the dangers of giving before a doctor or at least a nurse tells us. The many drugs in our house, which one will we start with? We cannot do that, what if we overdose the child? Sometimes the company will say 'this one is more strong for diarrhoea' what if we start using the too strong one? Another time they will say 'the Pfizer© one is weak from staying at Warehouse, please destroy your stock' , we can have up to 10 cartons of something like that sometimes, they say 'destroy' what if we have used it because it dey in house yanfu yanfu (because the drug is plentiful in the house) ? No sha, shaa no (no, for sure)"

Interview with Mother of FSH Baby, a female neonate who presented with neonatal jaundice (Vignette 12).

This represented a unique departure from the acceptance of the practice in the population accessing the CHER. Taken together with another parent who did not self-medicate her child (following a recommendation by her sister -a medical doctor- to immediately seek PEC), this serves as evidence within the parental perspective of an important difference in opinion on the perceived advantage/usefulness of HBSM as part of PEC.

4.3.1.5 Exploring the Empirical Evidence of Influence of HBSM on Outcomes

Of the seven self-medicating parents, two children died within 24 hours of admission to care at the CHER. The second death, which occurred from complications following a severe autoimmune response to the medications administered at home, served as a very strong illustration of the risks associated with this practice. This child was identified during the ninth of the 18 interviews, and the timing of the interview was fortuitous as it allowed the issue to be raised with parents who were later interviewed. The child had received a cocktail of medications administered at home by his parents, and later by a 'nurse' who was a neighbour of the family. The child presented having been seen at the Massey Street PER and

immediately referred to the CHER, and had been diagnosed as a case of Stevens Johnson syndrome. The excerpt below is from the field note entry which reflects the account which later formed part of the interview following the child's entry into the CHER:

> *A loud wailing and crying from a child is heard suddenly from the reception area. Dr B enters the consulting room and says "there is a possible Stevens Johnson Case outside", then she leaves immediately. [loud crying continues, but is somewhat dampened when Dr B closes the door.]A white capped Senior matron enters "Dr K! There is one Steven Johnson outside! Did you ask them to go?" Dr L says" we have to find out if there is space on the wards" The SM continues "she said she gave one antibiotic, the bottle is here with her. How far, are you going to admit that diphtheria?"[the loud crying and wailing continues and the child is beginning to be heard saying "no no no don't no!" in English]*
>
> *Dr K responds that the SJ child will be seen immediately and the PH child had been reviewed by Dr OD. The SM leaves Sister Crv enters again carrying some case record cards followed by a small man in a long polo top over black trousers, "please let them register...there is space in D" Turning to the man she says "so you register and collect the small card eh?" He nods and thanks her. The door to the consulting room opens and a young boy about 4-5 years old enters wearing a pink hospital sheet crying loudly. "I want to LIE DOWN!" he screams and he is placed on an examination couch. "Cold cold cooollld!" and the Rotating fan is immediately switched off [I was nearest the switch]. He almost immediately stops crying and is shivering and whimpering quietly now. He is covered in desquamating sores and blisters and has been covered liberally with "gentian violet"*
>
> *The mother enters a smallish light skinned woman [later confirm she is Igbo} and begins telling Dr L her child's history in English. The child was treated for fever using a "Nurse wey dey work for Massey" [a 'nurse' at the Massey Children's Hospital] . He had been treated with the Antimalarial treatment Chloroquine, and he developed itching "E never do am before, He woke up in the night say body is scratching me" for which the same Nurse prescribed piriton and "Rosiclox"-local brand of ampiclox-- and calamine lotion. "After 3 days now, the body come be like e get boil boil everywhere and e dey shivering...That day we see nurse she say GH doctors are not working" "I said see the body is peeling..she then said to use sponge to wash everything away" Following this the peeling became even more wide spread as initially the "boils" were "on his chest first", at which point the nurse then prescribed erythromycin. Overnight, the blistering became even more painful, at which time the family made arrangements to see their family doctor, who recommended the CHER*

From the fieldnotes on SJB, supporting information in Vignette 9 (Appendix D)

The evolution of symptoms following the use of the named variant of antibiotics raises the issue of whether there was indeed a unique reaction to the medication by the child, or whether the medication would have produced these effects in another child. When asked if the medication was one they had used before, the parents stated it was the usual brand. They also strenuously denied using concomitant herbal medications or changing the child's diet. Furthermore, any evidence as to whether this was a genuine licenced product was unavailable.

The primary features of HBSM of interest here were the child's being administered medication:

1) Without a proper prescription
2) Purchased from unlicensed sources
3) Multiple types: calamine lotion, antibiotics and antihistamines

In addition, the extended time spent at home by this child with worsening features of the illness and the attending drug reaction demonstrates the detrimental delay effect as the child eventually died within 24 hours of admission to the CHER. This instance does not make the argument against the named drugs' safety; indeed such an allegation without additional evidence would be irresponsible. Rather it demonstrates how the practice of HBSM is potential risk because it represented the voluntary removal of a layer of prevention (see the Kisoon and Goldman model). In this situation this prevention would have been afforded by the existing regulation of pharmaceutical dispensing and licensing, which although resulting more than ever in

the need for forward progression into PEC, ironically, results in delayed care seeking, while parents wait for these drugs to take action.

Every subsequent interviewed parent (nine in all) when asked whether they would use medications they were familiar with at home if they thought their actions could result in an adverse reaction, admitted they had not considered this. One mother specifically said:

> *"But how can a normal drug be dangerous? Is it every child they give drugs that reacts? Like now the older sister has taken the drug, and is better, why should the younger be different (I ask if she knew why children were not given Aspirin-she didn't know- explain about Reye's syndrome in children, and) "Jesus! You don't mean it! I don't believe it o Researcher! You mean Aspirin and Panadol no be same!?" Haba! How man go do now?! It is good to ask then, better far far better to be asking, knowledge is power o.*"
>
> From interview with the Mother of DKI a 5 month old male child who presented with a history of diarrheal illness and a "high" fever.(Vignette 3)

When health professionals were asked about the risks from home-based treatment practices identified among the interviewed parents, all groups of professionals soundly decried the practice as shown in the excerpt below:

> *"So a child falls ill, the mother first consults with her neighbour….and they say "oh i used this drug, this one this one, this person used that drug" And then they give the child the drug, one day passes, two days, the child is not any better. But do they come to CHER? Noo. Then they go to the Chemist, not the qualified ones attached to hospitals o. The peddlars, somebody who opened a shop and does only what they h=think they know! Another three days and the child will still be at home using all sorts! Combinations of pharmaceuticals and chalk for all we know! You are laughing, is it a lie? (All around the room there is laughter and people are nodding in assent) That child may not reach LUTH till they are gasping, and it could have been a CQ resistant Malaria, easily treatable with Artemether or Mefloquine. Nigerians can be so clueless!"*
>
> Registrar's focus group 2, March 2011

As this excerpt suggests, registrars linked the risks to children following self-medication to the questionable standards of over the counter medication and the

procurement practices of parents, as well as the resulting delays in attending care. The health professionals acknowledged the impact of the input by members of the community of the family on the degree of parental acceptance of the practice. This awareness of the social pressure to do what is ‘accepted’ or ‘done’ was reflected by the parents opinions on traditional medication. An additional finding was that on their own, none of the interviewed health professionals had noticed whether or not parents made a distinction between the acceptability of traditional or pharmaceutical self-medication.

4.3.1.6 Summary

This study showed that HBSM could be traced to mortality outcomes (undesirable outcome) among children at CHER directly by:

a) Exposure of children to non-regulated dosing and usage of pharmaceuticals.
b) Delaying a child’s primary access into the formal care-seeking pathway.

The background mechanisms supporting the existence of the practice in this population were identified as socio-cultural acceptance of the practice, the role of the community in prescribing care, and finally, the absence of drug safety awareness among the population with widespread access to over the counter medications.

HBSM practices in response to acute childhood illnesses are commonly used and considered acceptable among Lagos parents attending the CHER. The parents believed that the practice of using both traditional and pharmaceutical agents was appropriate for common ailments. However, they identified that occasionally, such as for younger children and those with conditions with no known easily available medications, it was better to be speedily engaged with orthodox PEC care at a hospital. The entire study population identified the importance of the relatively lower

costs of the components of traditional/herbal self-medication at home within the decision to self-medicate.

In this study, the primary reasons identified for choosing HBSM revolved around a perceived effectiveness of the drug agents and presumed knowledge of the appropriate regimen. This occurred regardless of how the drugs were procured:

a) Directly purchased from chemist retailers 'over the counter' without obtaining a prescription
b) Via health professional endorsed prescriptions and the relative cheaper cost of 'over the counter' medications against a visit to the doctor.

Many parents had not initially been aware of the dangers of adverse reactions following HBSM until directly faced with the issue, and they appeared poorly informed on adverse drug reactions in children as a whole. The minority of interviewed parents with direct access to professional medical advice within their home or community were in agreement with all the interviewed health professionals who believed that these practices were potentially detrimental to children by causing delays and potentially, adverse reactions.

Among the studied population, knowledge gained by being familiar with the potential dangers of drug misuse following HBSM, informed the strongest opposition against the practice. It appears that here also the non-availability of information played a greater role than the level of education attained in the practice's popularity among this population. The only facet of the HBSM decision making in which educational attainment appeared to play a role was in the selection of sources for the pharmaceuticals used, as the use of pharmacies of uncertain registration status were reported among the least educated mothers.

4.3.2 Care-Seeking Activity at Private Care Facilities

4.3.2.1 Introduction to the Factor

The analysis of the qualitative data revealed another important category of issues arising immediately following HBSM among the children admitted to the CHER. Although the use of private care for acute illness is common within developing countries, there was limited literature on private practice-based populations in the SSA region prior to this study.

4.3.2.2 Patterns of this Practice among Parents

Twelve of the interviewed parents opted to take their children for privately operated orthodox healthcare during the index illness once the decision to seek care outside the home was taken. Ten of these parents had their children treated at private hospital facilities, while two consulted private practice nurses who visited the patients' homes and referred them onwards to the CHER without an overnight stay in an intervening private hospital.

4.3.2.3 Exploring the Reasons for Decisions to Utilise Private Care Facilities/Practitioners

The main reason identified among these 12 parents for selecting a private facility was the family's familiarity with the doctor and their long association with his practice facility. The following excerpt from the interview with HBB's mother demonstrates this:

> *"I ask the mother a few more questions and discover she is 30 years of age and She has been assisted in caring for her baby by her mother who visits regularly. She herself has not and has gone back to work since her baby was born: "make him grow well first". Baby Hb has been fully immunized for his age, as shown on his record of Immunization "Road to health" card. This card was endorsed by the same private hospital they used for her antenatal care,*

where the child was born and from where the child was referred. The father says, "in fact that is our private doctor we always use him we have been with him for a long time, now over 9 years". "He examined and quickly sent us here. As he sent us, we came quickly "The mother also explains that although the child has had an episode of cough and cold before this illness, "e did not sick at all" [he has never been seriously ill]. "Na because e no 'gree eat him food n aim make us go hospital" [the loss of appetite was the main symptom which prompted them to seek care this time]. However she shows me a medical booklet from Dele Medical Centre showing treatment for a febrile illness and pallor treated in September. I ask if she showed this to the doctors at CHER, she says "they didn't ask us for it"."

Interview with Mother of HBB (Vignette 15)

Additional reasons in support of this feeling of familiarity and ease of access were given by two mothers whose children were both neonates; their home address' proximity to the hospital, and having given birth to the child at the facility.

Regarding the use of private consultations with nurse practitioners as reported in two of the interviews, the parents stated that their primary reason for using them was also their familiarity with the nurse and proximity of her private practice to their homes. One of the children seen by a private nurse developed a complicated reaction to the medication she had prescribed for complaints about itching [SJB]. The resulting reaction eventually resulted in the child being admitted to the LUTH where he died within a day of admission from complications of the condition, even after being admitted to the wards. The second child examined by a nurse (A PrZ) complained of acute respiratory failure and failure to thrive, and was immediately advised to attend the CHER. This child was later diagnosed as a case of neonatal sepsis, and was eventually discharged from the CHER. Both nurses were identified at working at state hospitals, and each was said to have been practicing in a private

capacity for over five years, but neither parent knew what qualifications they had attained regarding home practice.

A second set of reasons which motivated these parents to use private care were their opinions about the quality of care available at existing public health facilities within the state. Parents specifically stated concerns about these facilities' poor records of patient safety and one parent specifically singled the LUTH out among other public facilities:

> *"I don't like government hospitals...you know I have never heard of someone coming to LUTH except to hear the person now died! People are scared when they hear LUTH."*
>
> Interview with Mother of BKR, male 5weeks old admitted and treated for sepsis, who died within 24 hours of admission

The health professionals at the CHER were themselves aware of the existence of these types of opinions among the general public:

> *"They may not [attend care]….especially if they hear it is LUTH, the patient may not come…because of fear of dying."*
>
> From House Officers' focus group, March 2011

This first excerpt re-stated the existence of the public's wariness regarding the LUTH and its safety and the following excerpt from the senior registrars suggested a potential avenue for the proliferation of the less-flattering opinions about the LUTH. This involved the tendency for the accompanying outbursts of emotion following undesirable outcomes for children and other patients of the LUTH in order to attract public attention and publicity:

"Yes of course, we can see how it is. The one who is well[patient who leaves CHER in better health] smiles quietly and is going home, but the one who has lost the beloved one will cry and the whole world will hear the cry, and they will say, "people always die in LUTH". But the thousands who go home well, nobody hears them."

From senior registrars' focus group , March 2011.

Such outbursts were apparently more noticeable than the commoner but 'quieter' responses to outcomes, such as being discharged home or to the wards or clinics, which actually constituted the experience of the majority of patients at the CHER.

From among the 12 parents who used private care, two mothers stated that their reason for attending private care in the index illness was the temporary closure of their preferred alternate facility, which was due to the Lagos doctors strike.

"but more than that we go to the GH, it is what we do for all of us, we don't sick too much and the place is near…This time, because as government hospitals are on strike. We went to the private near us, when they wanted to send us again, they said the only place open is here. Normally we go to the GH."

Interview with FSH Mother,see Vignette 12

After trying our GH Ikorodu, they said Fashola and the GH doctors are fighting!,I did not waste time to drug her at home, after that we go private before we come from Ikorodu to here.

Interview with CC Baby Mother see Vignette 2

4.3.2.4 Exploring the Reasons for Decisions against the Use of Private Facilities

The six parents who did not select private care options as their primary stage of care for their child's emergency expressed different reasons for this decision. Three were immediately directed by their communities/social support systems to an intermediate public facility and one child was brought directly to the LUTH because the mother had attended the clinic earlier the same day:

"I came here on Tuesday night. I had brought her to the clinic appointment on Tuesday afternoon and by evening she was vomiting and coughing seriously. I decided to rush her down. I came alone, it was after 7pm-around 7:25pm."

Mother of KLA 9 month old girl presenting with malaria and gastroenteritis (Vignette 5)

Another parent who had moved directly into the public care seeking pathway specifically stated her reason was that the costs of private care were prohibitive for her:

"First I go council for Eti Osa, as I no know wetin do the boy...them give am injection and after we go..but then as the sickness is getting worse, My neighbour see me as we from come and say I should call my pastor and tell him...pastor say we should now go City of David Hospital-come send us with letter. When we reach there they give us paracetamol and some other things" Again she closes her eyes and leans back with a deep sigh. "Myself I no for fit go private if not say na Church place be that. The money…private money dey dey big.

The doctor at city of David say they doesn't used to stay there long and gave us transport [money. We call Pastor again and he advise us to come LUTH. But I go Massey" She stops again and shakes her head. "they too now send me to Eti Osa as i no get money with me...but they Drs are on strike so Pastor advise me again to go LUTH.

"*It is God that helped us that we came this place. But me now I am not feeling fine" She has not eaten all day and her friend [lady who has accompanied her] has gone home."*

This mother, 'P', was notable for two reasons, she eventually attended both public care and private care before attending the LUTH, whereas all the other parents had attended only private care on route to the CHER. However, the private care was recommended and paid for by a third party, her church. Furthermore 'P's' socioeconomic status, which prompted her opinion, was reflected in her difficulties in accessing finance for her child's healthcare needs in this emergency (see appendix D).

The attendance of both private and public facilities, although unique to 'P' within the sample interviewed, was found to be more common among Lagosians. This is shown in this excerpt from the focus group with the most junior health professionals:

> *"Up and down, some patients can be moving up and down [back and forth] collecting referral letter [from private facilities to public ones]. They may not especially if they hear it is LUTH, the patient may not come…because of fear of dying . Especially if it is surgical, they in fact can keep that letter and be looking for who will tell them there is medicine for it."*

The evidence for how these social preferences for specific types of treatment, i.e. against surgical care, affect these initial care decisions is limited, but further examples are available in the later stages of care seeking.

The final parent who was a non-user of private care during the index illness made her choice simply based on her home being close to the LUTH and had happily alternated attendance for other illnesses with an often used private facility:

> *Speaking of LUTH "Here is close to me, we live at Cardoso" Cardoso Street Mushin is about a 15 minute walking distance from the gate of the hospital nearest CHER. However for most illnesses she goes to "May Clinics" private facility. … LUTH near pass So I just waka come[walked here] this time"". When she arrived at LUTH she says "they answered us ...they didn't waste much time. It was after they admitted us that they wasted time."*
>
> Interview with mother of J WZD (Vignette 18)

4.3.2.5 Exploring the Empirical Evidence of the Influence of the Practice on Outcomes

Health professionals unanimously believed that attendance at private care facilities for children's emergencies largely negatively influenced outcomes due to a lack of adequate expertise in these facilities. This opinion was expressed by all groups of professionals interviewed during the focus groups as shown in the following two excerpts:

"...if a child presents from private hospitals sometimes they have been mismanaged and in some private hospitals [yes, yes] they know that they don't have facilities to manage this kind of situation and they still go ahead and, admit. These hospitals are very different... you don't know whether it is a doctor or a medical student consulting there."

From the Nurses' focus Group, March 2011

"… Why should dysentery kill a child if the first person who saw the child knew what he was doing?!! I think the problem is that the private centres and the general public are just clueless when it comes to managing children." This child we saw last year, with dysentery, a 3 year old oh, they went to private hospital, the doctor gave Omeprazole, Vitamin K [laughter all round] gave 5 % dextrose water to this child, but this child was severely dehydrated, and [when] they brought the child here finally this family looked haggard from worry, but as they were carrying the child inside CHER, the child died, almost within minutes."

From the Registrars' focus group , March 2011.

This second excerpt goes on to illustrate how attendance at these private facilities lacking better standards of consultation, could be linked to the delayed arrival for definitive resuscitation and care at the CHER and how this contributed to children being reported as 'brought in dead'. The validity of this link is supported by the experience of one of the children whose parents were observed in the CHER where the outcome was brought in dead (a case of neonatal jaundice):

"We had been there [at the private hospital] after the delivery. She [their baby girl] was yellow at least as for as long as I noticed. I mentioned it to the night people, they wrote it. Then again I told the afternoon people, the wrote it again, nothing doing. Finally, when the owner of the place, the oga came, I called him that the baby is yellow, he said no problem. After she became bad, they started writing letter for use to come LUTH. I see now that he was just after his money."

From an observation session, the father of a BID neonate in conversation with the Chief Nursing Officer October 2010

In this excerpt the parent went on to suggest that the financial motives of the facility clinical staff, being able to continue to charge fees while (although not

overtly) encouraging a longer stay at the private hospital, was at least part of the reason for the delayed referral. This form of financially motivated extended stay at hospital was later supported by evidence gathered from the senior registrars during their focus groups:

> *"On the part of the private physicians, a lot of them don't know what their capacity is and what they really can manage. In short they do not know when to refer a child. What they… to me what I think is their parameter for keeping patients is" if you can pay we keep you here, once your money is running out, or we feel the child is going to die, we'll now push you to LUTH"*
>
> From the Registrars' focus group, March 2011

However, as a whole, health professionals admitted that these concerns over poor quality care at private facilities did not apply to all private hospital facilities in the state. They clearly stated their beliefs that some of these facilities were of standards good enough for even the teaching facility at the LUTH to consider referring children to when necessary, but that they may not be readily affordable for most of the population of the state.

> "*We had two very ill children who could not be admitted because of the strike …we advised them to go to a good private hospital, Like L----n or H---na or somewhere."*
>
> From the Registrars' focus group, March 2011
>
> *"there is no space for this child and the child is surgical, intussusception. Maybe a very good private hospital!"*
>
> Medical officer on duty, Observations from field notes September 2010
>
> *"We had one serious case that had been here for so long. L**oon [private hospital group] said they should bring N 1 million [£4000] for the thoracotomy and because the child needs mechanical ventilation. They have equipment there the only problem as always is the cost, who can pay 1 million like that?"*
>
> From conversations with the Chief Nursing Officer November 2010.

4.3.2.6 Summary

This study has showed that emergency care seeking care at private facilities influenced the undesirable mortality outcome among children at the CHER by:

1) Resulting in delayed referrals to the CHER by private facilities.
2) Exposing children to limited PEC expertise at these facilities.

Within the population, the stated preference by parents for private services, and the perceptions of poor service at the LUTH specifically, were identified as key mechanisms supporting this practice among the studied population.

Private practitioners were most frequently the first formal care-seeking option selected by parents of the children in this study. This decision was linked to their familiarity with the private practitioner from previous use and the acknowledged poor perception of public hospitals as a whole and LUTH in particular. An additional reason was the strike by Lagos doctors, which resulted in the closure of other public health facilities in the state.

An additional issue which emerged from this was the very real problem of the inequity of private healthcare access among children needing emergency care in Lagos. In this study the existing good quality private facilities would have been inaccessible for the poorest parents.

The parents and health professionals at the CHER also disagreed on the benefits of using private practitioners for emergency care of their children. Health professionals concerned about the hospital-based private practitioners, in particular, highlighted poor referral practices and the non-availability of adequate paediatric expertise. These two factors were illustrated as directly contributing to mortality

risks for children in the CHER who had attended private facilities for emergency care. However, obtaining direct evidence of existing standards of practice at these facilities was beyond the scope of this study.

4.3.3 In-CHER Communication between Parents and Health Professionals

4.3.3.1 Introduction to the Factor

The communication between the health professionals at the CHER and parents/caregivers reflected different forms of the basic functional communicative unit within clinical paediatric consultation in the triadic interaction described in Chapter 2. Specific forms of health professional/caregiver communication observed at the CHER during the study included:

1. Triage room: nurse/doctor-parent/caregiver-child
2. Consultation room: doctor-parent with additional caregivers in extended family-child
3. Ward/treatment room: nurse/doctor-parent/caregiver/additional caregivers in extended family-child

During the study it emerged that communication largely resulted in the acceptance of an agreed treatment plan by parents, in the form presented by the professionals. Professionals were observed providing additional information, and clarifying suggestions and chosen treatment plans when parents requested they do so. Where disruptions to this desired pattern occurred, they manifested as specific instances of disagreements and misunderstandings. These took the form of overt expressions of displeasure, ‘shouting matches’ between parents and health

professionals, which were often accompanied by more covert expressions of resentment or disapproval by parents.

4.3.3.2 Patterns within the Communication between Health Professionals and Parents

During the study, specific instances of overt disruption in communication were observed. These were where the parents were responding to delays, which their children had experienced, in receiving care:

> *Suddenly there is a raised male voice speaking in English "no vacancies in E4 (E4 ward is for in-patients care in paediatrics, Post-CHER) so I went there" "beds lots of beds…no one has attended to us all morning! My child, my baby! I have every right to do what i want, I am not going to be taken for a fool!"*
>
> *I look into the corridor and a tall 6ft 4 lean man in a blue shirt is screaming at the Chief Registrar and wagging his finger in his face, he occasionally turns to shout down at the Matron herself and generally is speaking at the very top of his voice. A lady in yellow Ankara dress is holding her head and crying. (There is a low voice in the background, I notice the junior registrar on duty has come up to say something to the man)*
>
> *He raises his voice again, "Discharge! Yes go ahead "This child needs a bed NOW!, But you are pushing us about …. no I WON'T calm down, this is nonsense!! You people here are just wicked!"*
>
> *The security guards move in quickly to calm the man down and remove him from the CHER building, the Matron takes out her cell-phone and makes a call entering her office as she does so.*
>
> *[I look at the faces of patients as this goes on and most mothers/female relatives are looking sad and shaking their heads, while the two men waiting in the corridor look as though they agree with the man "you see?" they say , shaking their heads]*
>
> From observations during the fieldwork October 2010
>
> *A bespectacled man followed by a woman carrying a 5 year old child naked save a diaper [Pampers] rushes into the consulting room I follow and heard Dr Nwzk saying "As I told your wife earlier, there is no space" "Where do you refer us to? I am also a health personnel you know, I work in the Microbiology Department at LASUTH*

"FMC Ebute Metta, here we only have space for neonates now." The man then leaves the consulting room with his wife in tow.

Once outside the CHER he is already making a call on his cell phone, he speaks for a few moments and then re-enters CHER hurriedly, he enters the consulting room and hands Dr Nwzk the phone saying "Someone wants to speak with you"

[I can only report Dr Nwzk's side of the conversation:]

"Hello, Good evening Sir…Yeah I can hear you....I didn't ask them to register because the only space we have is for neonates now, That is the problem...no no bedspace for the child...the ward is filled up." The bespectacled father sighs very loudly at this point

"Maybe tomorrow we will discharge patients. We have to discharge before we can have available bed space, and that would be in the morning. Yes sir, that is the problem we are facing" The father again sighs very loudly

When I ask about the conversation, Dr Nwzk says "Cerebral malaria...severe enough for admission you know, but if we register now and there is no bed space, they will start shouting"

From observations during fieldwork November 2010

These two parents and their children were experiencing barriers with forward progression through the CHER. However these barriers in fact were not as a result of the parent-physician communication, rather as a direct result of the over-subscription of the CHER due to the Lagos doctors strike:

a) The first child had not been transferred on to the wards for in-patient care.

b) The second child was not being allowed into the CHER for admission to the CHER lying-in space.

In each situation, the health professionals involved had provided some measure of explanation of the situation; neither parent immediately accepted the explanation, and they became agitated. One became directly confrontational with the health professionals and the other attempted to influence the decision through external pressure from a senior physician who was a personal family friend. The eventual

impact on the children's outcomes was as follows: in the first instance, the parent expressed a desire to withdraw his child from care against advice; and in the second, the parent had to accept a referral for care at a different facility altogether. Fortunately, the first parent later reconsidered his decision after a lengthy conversation with the Chief Nursing Officer (Matron).

Health professionals confirmed that they were often faced with parents threatening, or eventually, acting on the decision to withdraw children from care following experiences of retarded progress through the CHER protocol. These professionals suggested that parents may not have wholly understood the realities of the management protocols as the perceived 'slowness' was due to the time needed in the CHER for actualising treatment protocols:

> *"At a point parents were threatening to go …they didn't understand what we were doing with the child …"… the child is not getting better, and you are asking me to go and do one test! I wan' take my child away". They don't know how long it takes to get the results back from the lab, especially if it is something you are trying to observe the patterns from serial results"*
>
> From Senior Registrars' focus group, March 2011

However, the existence of systemic failings in the diagnostic processes used by the professionals was identified as contributing to these delays by the health professionals themselves. Examples of such failings included water supply failures and power supply irregularities. The following excerpt demonstrates the direct link between one of these failings and the delayed progress. In this instance the parent reacted to the delay by almost withdrawing a neonate with neonatal jaundice from care:

> *"Again, like the children that were on photo therapy and power supply was not regular. There was a child that when we collected samples for serum bilirubin it was fifteen, when we repeated in the next day it was fifteen. I was looking at the result that, "why is this thing the same?". The mother just said*

immediately, "there was no light now, there was no light!", so because of that he decided she wanted to DAMA. If they understand exactly what is wrong with the child, the reason why they are doing these tests and all that, I think

sometimes they don't understand so because of that they want to DAMA."

From the Focus group with the House officers 2

In another two instances parents qualified their experience communicating with health professionals as involving outright rudeness, and this made the parents very resentful of the health professionals. The observations of the mother of KLA, a nine month old girl who presented with symptoms of malaria, acute respiratory infection and gastroenteritis are shown below:

"… In fact one of the doctors that I met that day...He is not a good doctor... He said "Why didn't you keep this child till tomorrow kpa kpa [might as well]! he was passionless...he is in the wrong profession…"I came, I spoke to him...they were pushing us from one to another "*Why didn't you keep this child till tomorrow pa pa[might as well]!.. I am highly disappointed- I was very upset"*

Interview with Mother of KLA a nine month old girl admitted with signs of malaria and gastroenteritis (Vignette 5)

This mother's account clearly contained material indicative of her concerns about her child's clinical state being dismissed by the doctor. Further reasons for this behaviour were never obtained, as the researcher was unable to identify the doctor involved. In yet another situation of perceived rudeness following a doctor seeming to dismiss a parent's concerns, one of the interviewed mothers displayed her displeasure more covertly:

"Dr come and see my baby now" "we are still coming" Dr Aj says, keeping her head down in the notes as she moves off quickly. …mother looks after her and gestures towards her with a nose wrinkle [Indicating a tease or disdain for the person it is directed at]. I ask what the trouble is "She is busy abi? Anything you ask her she will be writing writing, saying they are coming"[again a nose wrinkle]

I see Dr Aj writing her notes on the corridor some distance from the ward ... and ask her about the child "I am really worried about that child" she shakes her head and sighs. "The story is not really complete and I don't like how he is not improving…" I remind Dr Aj of the mother stating that she had presented to CHER straight after referral from a private hospital "that is what they say, but you don't know… the child is not doing well."

From observations during fieldwork October 2010

As the second excerpt shows, a more thorough examination of the context of this interaction (available in Appendix D Vignette 10) suggests that the doctor's apparent attitude was based on a desire to avoid outwardly displaying her level of concern about the child's status. This child eventually died within 24 hours of admission to care from sepsis.

A further exploration of parental conversations demonstrated that there was a belief among parents that the adoption of aggression may be the solution to both expressing dissatisfaction with the service and receiving the desired attention for their children within the CHER. This excerpt below demonstrates this point:

The mother of DKI (Vignette 3), is chatting with three other mothers in Ward 2. They are sitting with chairs pulled together close to DKI's bed, but still within view of their children. A student nurse is just finishing her observations on a child in the last bed beside the door. The women's conversation is about a parent of a child in their ward who has recently had a brief argument with a nurse, she says:

"I am just trying now, my husband said 'you know you are a hot tempered person better find where to go and pray.'...ah these people?"

Another woman says "these people here abi? That's how they left that woman's baby and she was shouting at them....they will want somebody to be like that, shouting" "Me I'm tired now oh, but you know LUTH! I just decided to stay and be strong oh, for my baby" The third woman nods her assent.

From Fieldwork notes November 2010

Reflection on this conversation highlighted the non-spoken attitudes which emerged among non-involved parents during the episode of the 'shouting parent' altercation

mentioned earlier. This attitude reflected an unspoken assent among parents and extended family at the CHER, with aggressive expressions of displeasure by parents shown towards health professionals. The relevant section of the previous excerpt is reproduced below:

> *[I look at the faces of patients as this goes on and most mothers/female relatives are looking sad and shaking their heads, while the two men waiting in the corridor look as though they agree with the man "you see?" they say , shaking their heads]*
>
> From observations during the fieldwork October 2010

4.3.3.3 Exploring the Empirical Evidence of the Influence of Clinician-Patient Communication on Patient Outcomes

The importance of the need to improve poor communication was chiefly acknowledged among the younger doctors:

> *"It depends on their being carried along. If they understand exactly what is wrong with the child, the reason why they are doing these tests and all that, I think sometimes they don't understand … If they understand exactly what is wrong with the child, the reason why they are doing these tests and all that, I think sometimes they don't understand so because of that they want to DAMA. Again, also like the children that were on photo therapy and power supply was not regular. There was a child that when we collected samples for serum bilirubin it was fifteen, when we repeated in the next day it was fifteen. I was looking at the result that, "why is this thing the same?" The mother just said immediately, "there was no light now, there was no light!", so because of that he decided she wanted to DAMA- that child later died at home.*
>
> *Several times when I meet a patient and they always tell me "Doctor, thank you but you are the first Doctor that is really telling me everything about this condition". "They are always' lost in transit'."*
>
> From House Officers' focus group, March 2011

The second excerpt above demonstrated that parents could potentially appreciate the provision of more detailed information on the existing treatment protocols and any barriers being experienced by the clinical team. One particular instance during the

observation in particular, provided clear support for the effects of better efforts at parent-clinician communication on improving children's outcomes during the study:

> *"Ah a positive target sign...yes yes. Well we are most certainly taking this child (HBB) up" Mr Ad**e looks a bit surprised and when Dr Odb the house officer explains what this means, he refuses flatly. "no we will get medicine for it please o." "we don't want operation, please oh,"*
>
> *Dr Odb then explains the consequences of no surgery to the man, Mr Ad**e decides he will need to think about this some more. Dr Odb accompanies him and his wife to a treatment cubicle presumably to speak in further detail.*
>
> *Later that evening, I call the PSU registrar-on- call to enquire about HBB (the child of Mr Ad**e. The reg Dr Ckx, assures me that they have indeed admitted Habeeb and are working him up for emergency surgery this afternoon "we expect him to do well."*
>
> From observations during fieldwork October, 2010

By the time the follow-up phone was made by the researcher, the house officer had provided a detailed explanation regarding their child's need for surgery, as he had a clinical history suggestive of intussusception (see Appendix D Vignette 15), which was confirmed by the 'target sign' mentioned above. The house officer responded to HBB's father's concerns by providing a detailed explanation of the need for a surgical treatment plan.

From these it can be seen that where communication events, which were either confrontational or positive occurred, it served to galvanize parents towards decisions, either towards positively engaging with the process (as seen in the observation above) or towards the decision to DAMA. This study did not observe communications directly producing delayed progression, however the intermediary role of the extended family as a result of this communication-towards producing these end points is seen in a subsequent section: 4.3.6 Extended Family Presence in the CHER.

4.3.3.4 Summary

This study showed that in-CHER communication resulted in indirect effects on outcomes, as it predicated decision-making regarding continued adherence to the treatment and care protocols at the CHER. The key role of this factor was identified within this study as keeping children and parents/caregivers effectively informed, so that they would remain maximally engaged with the process in the CHER, as evidenced by their on-going cooperation and adherence. The needed information included both individual (clinical updates and concerns) and institutional features, e.g. systemic logistical constraints affecting clinical decisions, such as bed space assignments. Where it failed in its key role in-CHER communication was directly identified as influencing:

1) The undesirable DAMA outcome
2) Delayed further engagement with protocols and the ability of the child to be categorised into one of the more desirable clinico-administrative outcomes (admission, ward admission, ward transfers etc.).

However, where successful, in its key role, in-CHER communication directly influenced the advancement to a timely desirable 'transfer to wards' outcome, following the use of effective information-giving counteracting strongly stated sociocultural beliefs.

Two specific problems with parent/caregiver-clinician communication emerged clearly from the primary qualitative data in this study. These were:

a) A lack of information on systemic barriers being passed to parents
b) The apparent dismissal of parental concerns by health professionals

Both of these resulted in parents feeling dissatisfied with the care received, there entering into arguments or voicing complaints about the care, and eventually seeking to terminate the admission, regardless of the clinical status of their children. This current study specifically highlighted the problems which emerged when professionals did not make the real requirements of clinical plans and systemic procedural logistics explicit. When this occurred parents misunderstood this as being dismissed by the professionals. In this study the key agendas which emerged among professionals were attempts to advance treatments in light of limited information of intent and parents on specific occasions resisted these plans. Among parents it also emerged that there was an acceptance of the need for aggressive expression towards advancing their own concerns about their children in the CHER.

The study also showed that the successful advancement of clinical management was possible, even in the face of initial parental resistance, when the intent was clearly communicated to the parent. This directly shows the potential for health professionals to consider the use of improved communication during PEC in order to address the emerging treatment related issues with parents.

4.3.4 Parents of Low Socioeconomic Status

4.3.4.1 Introduction to the Factor

As described in Chapter 1, the population of Lagos State was reported to be wealthier than the National averages for wealth, as measured using proxy variables (Also See Appendix A RESULTS; Wealth Index). In spite of this, the study encountered children from families currently experiencing features of low socioeconomic status; however, in determining the relevance of this to their children's experience in the CHER, for the sake of this study, the following were

considered as indicators: the ability to make the basic registration charge (the lowest required charges at the CHER), being in some form of employment, and having a permanent residence.

4.3.4.2 Exploring the Features of Low Socioeconomic Status among Parents

I realise the child must have been severely anaemic and febrile - the main reason for the urgent presentation to LUTH. I ask where the child was born "Nwajiugbe (a rural village in Imo State Eastern Nigeria) 22 Tuesday" "February". I ask if the child was given any immunisations

"I had him in the village in a herbalist/traditional birth place and I have no home of my own. When I ask what she does for a living, she says "If I go buy groundnuts I cook I sell. But I don stop am … no money (to) cook ... no money…nothing"

She is 18 years old and was only educated "to primary 6" is the first wife of her husband [that she knows of] and he is an "offload" [they accompany long-haul trailers and lorries and help offload the cargoes in different cities]. She thinks he is 23 and smiles a bit when we discuss him.

They have no fixed home as he is always on the road and she and the child "we just dey hang everywhere we get to sleep" "This boy family [the husband] if this pickin sick I go meet them, them tell me say, na me born am make I dey go, make I train am" "Is is good for somebody ear" She shakes her head "Is it sound like good?" [I have to agree at this point that it most definitely is not a good thing]Even if I beg them...they will not give me". I ask then where they are staying in Lagos "we are staying somebody house" A good Samaritan has allowed her to sleep in her boy's quarters. She met the lady for the first time when she came to Lagos.

From interview with mother of KSMB 8 month old male infant who presented with signs of anaemia, and a respiratory infection. (Vignette 4)

P herself is unemployed. When I ask she says "I am not doing anything" and she averts her eyes as she says this, when I ask about school she says, very quietly "….nothing, now" "I would like to go to school and learn a work. I was a kid when I came to this Kuramo ... When I ask her to describe her home she says "na this pako [wood] and tarpaulin we are use on the Beach...people are managing there... [makeshift shelters with no electricity or sewage]. Useless people dey there. All these grown up boys who smoke ... they are complaining, saying rubbish when I am massaging my baby, when he's crying

they say "is he the only baby? Always crying" But when they want somebody to wash cloth for them they remember me, but sometimes them no go give me anything...they use the money to just be smoking all the time."

From interview with "P", mother of a five month old male admitted for sepsis. (Vignette 7).

Within this study, these two women were notably poorer than all the other interviewed parents, as determined by their almost complete inability to independently make payments for the treatment and services received by their children at the CHER. Neither one was gainfully employed or had received any formal education. One spoke in heavily accented Eastern Nigerian patois, the other in a more anglicised pidgin version used in Lagos. Both young women were in their early 20s with no definable means of sustenance and neither gave any indication that their named male partners were financially able to contribute to the treatment and daily care of their children. Although neither partner was present throughout their child's illness in the CHER, one woman was accompanied by a church member, and her other by a distant relative living in Lagos. This indicated ways in which society-based responses to extreme poverty might emerge for children requiring urgent PEC.

During the current illness of their children these women experienced difficulty in meeting the care costs in the CHER, where the registration costs are N250 = £1. To this end, both of them had relied absolutely on the charity of strangers for their care costs. One depended on her church members and the other on a charitable private sponsor. While in the CHER, they made use of the left-over (unused) IV fluids and medications of other patients. Requested laboratory and radiological investigations were not carried out and at the end of the observation period for both children, had been left undone. In spite of these features, both children survived the first 24 hours of admission and were discharged home within five days.

The groups of health professional at CHER all identified that the lack of available finance for user fees and sundry in-hospital expenses was a common barrier to care at the CHER.

> *"In Nigeria, we have more poor people than rich people, we have the very low class people and they can hardly afford three square meals so most time because health is so much expensive ….the first set of thinking is bringing a child to a hospital in the first part you think about that challenges, hospital is the last choice"*
>
> House Officers focus group 4, March 2011

This excerpt described the population serving the CHER as mostly poor families whose relative personal needs frequently outstripped the option to enter hospital care. It was however, interesting to note that both children of the two women mentioned above had good outcomes from the CHER, one eventually transferred to the wards after three days, and the other was discharged home after five days in-patient management in the CHER.

4.3.4.3 Exploring the Empirical Evidence for the Influence of Low Socioeconomic Status on Outcomes

From the evidence above describing the barriers experienced by poorer parents regarding delayed access to care and essential treatment, it emerged that socioeconomic status was indeed an important factor to be taken into consideration in understanding outcomes among children in the CHER. However, as neither of these children died during the course of the study and of the three deceased children whose parents were interviewed, all of the parental support involved fewer financial barriers than experienced by these poorest families. This suggests that this factor in isolation could not directly indicate which children were at greater risk. Health professionals identified that the existence of additional factors within family groups

involved in care mitigated the impact of the financial barriers, as shown in the excerpt below:

The second interesting admission was a child that came in with severe anaemia and the PCV of that child was about nine per cent and the child was pale white, paper white. But the funny thing was that – I understand that the father of the child was not willing to donate blood, because in this place before you can transfuse a child, you have to donate at least a pint.

Mod: Why was he unwilling –, did he give a reason?

Bol: He had a lot of financial constraints then. Yes it was, financial, and he wasn't feeling so fine; so he feels like when he donates the blood he may well collapse. But then, the father disappeared for like four hours and we had – we could not trace him. So we had to now start now running down to the blood bank. The child was admitted in CHER, on a couch, and we were now the ones looking after the child here.

….. the mother was, you know, just going up and down but the father now was was nowhere to be found and we had to be doing a lot of running about. We took the sample, we had to beg the orderlies, you know, to quickly help us take it and – even the blood as of – by the time I was leaving the next morning we've not really gotten the blood to transfuse the child. The child was very breathless.

Mod: And what happened?

N: The child died on the following shift

Bol: There was even another one… a baby that came with a diaphragmatic hernia and the baby came in dyspnoeic, very, very dyspnoeic and we had to quickly call the Paediatric Surgery Team to come and review the patient and very, very interestingly this – the father and the mother they are very, very willing to donate blood and all the work up needed for surgery. They were very willing to do it even though they had financial problems, they were willing to borrow money and get everything done and the baby was being worked up for exploratory laparatomy.

Mod: Interesting. Those parents were also financially constrained

Bol: Yes

Mod: Was there anything different between those parents and the others

Bol: Yes, but one was willing to go all the way…The feeling why I feel that was because that child is a male child and the first male in the family.

Mod: And the paper white child was a girl?

Bol: Yes, a girl.

Mod: And what number in the family?

Bol: I can't remember, but it was a girl, so I think

Mod: You had a very interesting opinion on that, because it was a male child.

The financial constraints of family 2, and– how did the family of the diaphragmatic hernia child, what did they do to overcome these constraints?

Bol: They … called his elder brother and he called his Pastor to help him out. But the other family were just so negligent and they were not interested

[Both families were Christian, and both mothers were present]

Mod: The second family, did they strike you as more educated or less educated than the first family? Could you just compare?

Bol: I can't say they are from the same education, but they were speaking in their native language …..But the other, the second family, the second scenario that I painted, the family – the mother was restless like she depended solely on the father to take decisions, but in the other family the mother had a way of speaking, you know, here to here and talking silently and trying to find solutions, so there was a bit of mutual.. you know in the second family?

They [the family] were very willing to do it [requested investigations] even though they had financial problems. They were willing to borrow money and get everything done and the baby was being worked up for exploratory laparotomy….Those other parents s were also financially constrained…, one [group] was willing to go all the way…I feel that was because that child is a male child and the first male in the family." "And the [other] child was a girl?" "Yes".

House officers focus group 4 March 2011

The different outcomes in these two related excerpts implied and considered the presence of confounding factors, such as education and religious orientation on the influence of socioeconomic status. However, it emerged that the lack of family cohesion and cooperation towards a child remaining in care, as well as a potential

gender preference, were key differentiating factors between the means by which two families with financial constraints engaged in the CHER process for their children. The principal mechanism was how the factors directly affected the financial support generated for a child's care for parents clearly unable to provide independently the required finance for their child's care.

Regarding the CHER's position in addressing the common experiences of very poor parents as patients, a series of local solutions at the CHER were identified for caring for patients who have no recourse for funding;

> *"… The fund provided by one of our former provosts [CMUL] IFF is Ibitoyin Fawehimi Fund for Paediatrics, a certain amount every year, used to buy equipment, for the Department ….. The Indigent fund is for the entire hospital…"*
>
> From Chief Nursing Officer's focus group, March 2011

From this it can be seen that PEC at CHER had in place an institutional solution for low income parents, which was uniquely set aside from other specialties at the LUTH. It is worthy to note that only the senior management cadre of health professionals appeared aware of the existence of these funding solutions, as there was a dedicated question involving the use of powers existing in the LUTH towards addressing the factors suspected in worsening survival odds in CHER, see Appendix C.

The study identified the existence of socio-cultural mechanisms for financial support for poorer patients, charity from fellow patients and strangers at the CHER:

> *"I stand outside the CHER, about 20 yards from the Main entrance there is a small kiosk. The kiosk operated by the Hospital, and sells refrigerated refreshments such as bottled water and soda, as well as warmed meat and fish pies and cake. Two women in traditional dress come and sit next to where I am standing, I am now less than 3 yards from the kiosk, they are speaking in Yoruba. We exchange "good afternoon" and they continue their conversation*

about waiting for a friend of theirs whose child has gone into the CHER. As we wait near the kiosk, a man comes around asking in Yoruba "please in the name of Almighty God please I need N120 (just about 50p) to buy drugs for a child on admission, the father has not come yet today". He is elderly, possibly aged about 70 years and neatly, if inexpensively, dressed.

The two women immediately open their purses and between them give the man N70-I also respond to the request- and the man leaves thanking us and runs towards the pharmacy window. The older woman says "Hey the troubles the great troubles of hospital this LUTH here, Almighty God oh!"

The reality within this study was the existence of user fees for care at the CHER. Health professionals were almost evenly divided on the relative advantages of user fees:

"people should be made to pay for those things, but that time they need it, we may not demand money before they get it. Not insist on payment but provide the service."

From the senior registrars' focus group March 2011

"if government can have a policy or say have a certain age for free medical care for Nigeria children it would help…in the 90s it was free here. In the mid-90s"

"I was here when it was free, in the '90s Let me tell you one thing, they cannot cope… Look look, it is one thing to agitate for free medical care and quite another to do it effectively in, the 90's they are talking about was patient buy syringes, needle, gloves, because they don't have enough stock. …oxygen was not available because no money in the Hospital…it never worked, because there was no... material to work with … it was a hard hard time... No drugs... not available, it was very hard, After they started billing them, we began to have all drugs available."

From the Chief Nursing Officer's focus group March 2011

As shown in the excerpts above, some felt the barrier it presented to care was the primary concern, whilst others higher placed within the management structure addressed the problems the facility had previously and would face in the future without the available finances these fees brought to the hospital. They believed that

no fees would result in was a greater level of disservice if it meant an absolute lack of essential drugs and treatment consumables.

Finally, regarding the improvement of poverty among women, health professionals cited an example involving a mother who made a decision she could not support:

> *"The woman took the child to the hospital and later informed the husband, the husband said she should take the child out of the hospital immediately the woman said this child is sick and must be in the hospital. The husband came to the hospital and beat up this woman- the next day the woman had to go, because the man is the main financial provider. She had to go, it's bad. Women needs to be empowered they need to be able to take the decision because those are the ones that first to notice these things and women need to be empowered it can't be overemphasised"*
>
> From House Officers' focus group , March 2011

This excerpt showed the professionals making a wider link between the lack of financial empowerment in that woman's decisions and the outcome faced by the child.

4.3.4.4 Summary

The study showed that being of low socioeconomic status indirectly affected the children at the CHER's outcomes, by directly delaying their timing of engagement with all stages of the PEC pathway in-facility protocols.

Although such delays are established as risks for undesirable outcomes of death and discharged against medical advice, this study did not observe these outcomes. Instead, it identified important mechanisms mitigating the limitations of the components of low socioeconomic status, specifically the lack of finances for the protocols in the CHER. These included:

c) The locally available social support Ibitoyin Fawehimi Fund (IFF)

d) Charity from neighbours (patients, doctors) and religious organisations

The previous section described in-CHER Communication as having a key role in effective information provision for supporting engagement with PEC protocols. The absence of adequate information about the locally available support IFF at the CHER was evidenced by the fact that none of the interviewed parents and very few of the lower-level health professionals were aware of such a solution.

Neither of the poorest mothers identified among this study's population experienced the death of a child or were DAMA. This supports how important it is to establish, on a case-by-case basis, the existence of confounding factors in each experience (or each local culture); especially as they may mitigate the expected effects of socioeconomics on mortality in PEC, as previously established in the literature review.

The experience of the poorest, least educated mothers was their inability to engage with the care seeking process without funding for transportation, registration and eventually theirs and their children's upkeep in the CHER. Health professionals in the studied population agreed on the need for wider interventions for improving the financial and social independence of women in decision making for health, against the existing barriers.

This study identified the local social solutions presented within the CHER and the LUTH hospital setting. These were in the form of charity from neighbours, religious attendees, fellow patients, and the hospital itself. Internal programmes existed within the LUTH for assisting indigent patients, including a general Indigent Patient's Fund (IPF), and the IFF for indigent paediatric patients. However, this study was unable to

confirm the breadth to which such solutions were known and utilised among other cadres of personnel and the wider population attending the CHER in Lagos.

This study, in accepting the existing problems of low socioeconomic status parents, was able to identify viable avenues for addressing the financial problems of parents through the use of charitable funds available towards fee-payment, and the importance of the empowerment of women.

4.3.5 Placement of User Fees' Pay-Points at the CHER

4.3.5.1 Introduction to the Factor

Parents described the process of accessing the two pay-points designated by the LUTH for payments made for treatment and care at the CHER, as being very difficult to navigate. The primary issues included their distance from the CHER and the fact that these payments were all due prior to commencement of treatments in almost all but the most dire cases.

4.3.5.2 Patterns Related to Parental Experiences in Accessing Pay-Points

In relation to distance, the nearest pay-point was the one specifically for the registration of new patients was in the Dental School building. Although this pay-point is actually less than five minutes walking distance from the CHER, the facility is only available from 8am until 4pm, Mondays to Fridays. The second nearest pay-point is located in the Adult Accident and Emergency (A and E) Department. This is the hospital's central payment area, facilitating payments for the cost of in-patient admissions to both the CHER and the rest of the hospital. This pay-point also serves

as a central collection point for payments for pharmaceuticals to be dispensed at the CHER pharmacy after 8pm, as well as for the CHER registrations after 4pm and at weekends. The Adult A and E Department is situated in a completely different zone of the LUTH, easily a 15-20 minute walk from the CHER. However, none of the footpaths or walkways from the CHER to the Adult A and E Department and this second pay-point were signed at the time of this study, and often parents spent far longer than 15 minutes when seeking out the correct route to this pay-point.

> *"… I ask where the payments for CHER are made. I am redirected to the main Dental Building and … The receptionist shows me the adjacent window which currently has 4 people in a queue…. I ask the receptionist [about the process], she shrugs and says "as far as I know it [payments for the CHER registration] has always been here"*
>
> From observations during fieldwork at the CHER, September 2010

As none of the initial payments for registration are received within the premises of the CHER, parents must arrange supervision or personal portage of their child while they leave to make the payments, and very often, the child may have to be taken along.

> *"To 12! We were finally admitted at to 12! The only person I could call was my younger brother, but he had left by 11 o'clock so all that walking to the lab and the Adult A and E to pay and all that I was doing it in the midnight alone. And I am HBSS, they want another casualty here on their hands!" "all that walking, alone."*
>
> From interview with mother of 9month old girl KLA admitted with signs of malaria and gastroenteritis(see Appendix D, Vignette 5

> *"It is a very difficult time if the woman has come with the child alone. You cannot leave the child, so you now carry the child to A and E and back, . Some will carry them on the back, but if the child is big it is harder. Imagine if you have a seizing child, what do you do? Sometimes the nurses will take pity on them and find an examination room if there is space. Like now with this Strike, there will not be that kind of leeway."*
>
> From Senior registrars' focus group , March 2011

As shown in the excerpt above and the earlier one from KLA's mother, the inconvenience of the distance is compounded when parents are without another family member to assist with these errands. The inconvenience while acknowledged had at the time no systemic solutions, with the compassion of health professionals and neighbouring patients being the main recourse for parents caught in this predicament. Health professionals specifically identified the non-desirable nature of this practice, specifically identifying it as a main point for the improvement of practice in the CHER as shown in the excerpt below:

> *"During the day, no problems, they go to Dental department there to pay ...So that pharmacy being in Olikoye should work how it's supposed to, not to collect drugs here, go to A and E- it is a negative thing"*
>
> From Nurses' focus group , March 2011

> *"…also I would work to creating bank outlets for CHER instead of having to go all the way to the outlet in adult A and E to pay and some parents feel reluctant to do that."*
>
> From Registrars' focus group, March 2011

The potential risks to children due to this factor were highlighted by health professionals' concerns that the risks to children increased as a result of the delays to receiving definitive care represented by this process being prioritised over the commencement of treatment:

> *"That's where the payment points are. Dental is the closest to us, yes. So that one if the people there are not on duty, the only one that is on 24 hours is A and E and it could take ….time before they come back. And before that short period of time, help that is most needed by the child may not have been provided, or not provided as expected. You can only treat what you have. If the parents who are supposed to give you information are not around, how do you make diagnoses? How do you? The management must be commenced and the child stabilized rather than waiting for the parents to organise, go to A and E and then come back before even getting a bed."*
>
> From Senior Registrars' focus group , March 2011

From this excerpt it can be seen that the resulting absence of the parents for care and information and to support children on their admission, was a potential source of delays to prescribed care. Regarding the barrier these payment points appeared to represent, management cadre staff were better informed of on-going adjustments to the processes, than other members of staff:

> *"Pharmacists are now on call doing 24-hourduty now. And since November last year we've been asking the department to give us a cashier. There is a room for them upstairs and the one rostered for night should sleep there and take money from patient. This way the child is on bed downstairs and the payment is in the same building. Pharmacy are really trying even though they have no beds themselves."*
>
> From Nurses' focus group , March 2011

4.3.5.3 The Exceptions Concerning the Difficulties with Pay-Points

Parents stated that the only times they were not directly perturbed by the distances to the pay-points, regardless of the time of day, was when they had extended family or friends who could assist them. Indeed the presence of extended family and their roles following the delegation of the available chores within the CHER are discussed in greater detail in Section 4.3.6. One parent who was asked about this during the observation, stated that he was familiar with the layout of the LUTH and had identified that the route to Adult A and E Department by car was quite quick, a less than 10 minute drive. However, he also stated that any time gained would be lost by the difficulties of finding a parking space. This was confirmed by the Chief Nursing Officer of the CHER.

4.3.5.4 Summary

The placement of pay points at the CHER indirectly influenced outcomes for children through the delay in engagement with user fee protocols, and subsequent assignment of clinico-administrative outcome. This delay was directly as a result of the poor logistical placement of pay points relative to the CHER.

The characteristics of concern regarding the pay-point placements included:

1) Limited opening times,
2) Distance from the CHER - a 20 minute walk

The influence of this factor was unique in this study, as it served to emphasise the functional misplacement of user fees within the PEC protocol at the CHER; namely that payments are demanded prior to commencement of care, except in the event of resuscitation. All the participants in the study emphasised this as a problem within the CHER.

This study was able to separate the problems associated with low socioeconomic status and financial constraints from the functional delay to accessing care due to the placement of pay points in the institution. This served to emphasise the important supportive role of the extended family in bridging the financial and logistical gaps for parents.

4.3.6 Extended Family Presence in the CHER

4.3.6.1 Introduction to the Factor

The African family system involves members' lives being closely intertwined and this is enhanced when related families are neighbours within a larger family compound or are otherwise in geographical or relational proximity. The literature

review noted how African societies consider illness within individual families as a community-wide concern. Consequently, when there is an instance of acute illness in a child extended family members are frequently made aware of this and selected members accompany parents in attending care with their children in the CHER. The literature review also established larger family sizes as important positive socioeconomic modifiers on child survival following PEC in developing countries.

4.3.6.2 Exploring the Patterns of Influence of Extended Family Presence

Nine of the interviewed parents were directly observed as being with at least one member of their extended family and the remaining eight stated that their relatives were within the hospital but attending to other errands on their behalf. These relatives included uncles, aunts and grandparents. Among the children investigated using parental interviews in this study, only one child never had any members of their extended family present during the study, the destitute LWZD mother described earlier. The involved individuals within each extended family group would frequently change from hour to hour and thus there was a continuously changing pool of people around any one child.

These extended family members played demonstrable roles within the CHER, specifically providing the following forms of assistance:

a) Physical support for parents
    i) Running errands through the CHER registration and payment processes
    ii) Bringing meals and other comforts
b) Emotional support for parents
c) Direct financial support for parents

d) Contributing to decisions to remain at the CHER for the prescribed course of treatment.

4.3.6.3 Exploring the Empirical Evidence of Effect from the Presence of the Extended Family

All groups of health professionals were able to identify that the presence of helpful members of the family was directly advantageous to the parents from their previous experiences of encountering extended family in these roles:

> *"Africans run an extended family system, so all these children , we talk about finances, very few cases that you will find that … you will get money if you let your family members know that child's life depends on it- Yes, some are very good like that"*
>
> From Registrars' focus group, March 2011

> *"LUTH doesn't take blood from outside and it has to be from the relatives; they have to donate and the problem is with the blood group of that child. You may even have people coming from outside Lagos to help, with GSM (wider mobile phone coverage- since 2004), you can hear them calling their relatives for things like blood donation."*
>
> From the House officers' focus group, March 2011

These excerpts emphasise the dependence on the wider cultural beliefs and structures presented by the extended family systems. In this way the family's assistance is experienced as both beneficial for the children's treatments, as well as for the parents' convenience. The existence of the cultural hierarchical stratification of authority could also be detected among the families: grandparents as heads of family and other individuals occupying the same roles, such as great aunts/uncles, and elder siblings emerged from the studied family groups. The primary form of support exerted by these heads of family was found to be financial, as demonstrated in the excerpts below:

"*The grandmother followed him. In fact they came with the blood they were transfused with from the private hospital - she is the one paying, and she has all the materials from the hospital, receipts and prescriptions. She is the woman's mother and she is sending everyone up and down."*

From Nurses' focus group, March 2011

The PH mother and Grandmother re-enter the consulting room at this point with Dr ODu. The Grandmother is carrying a full looking Pharmacy bag "we are trying to put them up here so they will just stay downstairs" [The motivation for this appears to be to reduce the financial burden as the cost of CHER admission]

From observations during fieldwork, September 2010

In some situations it could be seen that this influence was not always a positive one, as the health professionals related that these individuals could prove obstructive to continued management if their expectations regarding the child's recovery were not met, or if they had an unsuccessful communication with the health professionals. This is demonstrated in the two excerpts below:

"*It was the – I think the grandmother – that was saying that, so they would take the child soon, back to the traditional birth attendant and the child will get better. And all that, so they DAMA-ed too. They went quickly, and I don't think the parents had a choice in the matter. She didn't feel we were moving effectively towards a definitive cure.*

…sometimes have a strong person in their family like a grandfather or grandmother or something that tells them to bring the child home because this child needs traditional care there is no hope for the child, they are not getting better. If the grandparent is very very stubborn, and we cannot convince them, they will not even allow the treatments we suggest to continue, sometimes they can be disruptive and if they fight them (the parents) they can mobilize the other family members to leave with them."

From House officers focus group 4 March 2011

Dr Ok sternly admonishing a very young-looking lady …"don't let her rule your life oh...you should be able to take charge and say "this is my baby and I know what is best for her."

"I can't say no to her oh, she has been so helpful...even yesterday with all the vomiting. I couldn't have done anything.

From observations during fieldwork November 2010

The first two excerpts showed how the grandparents disrupted the prescribed treatment for the child, which resulted in a discharge against medical advice. The last excerpt showed that the level of deference could be witnessed and perceived by the attending clinician. The seeming acquiescence of the parents appears to be very strongly linked to the relatively high level of financial and social support given by these grandparents/family heads.

In attempting to understand the motivations behind the grandparents/ head of family decisions, apart from the perception of non-progress towards recovery, the existence of a grandparent's/ head of family's understanding of a 'viable care alternative' was also realised when examining the excerpt below:

> *"one of the parents' mother – and she actually works in the traditional birth attendant's, so she was of the opinion that this child has stayed here for three hours, no improvement; then they should start going. She knows the TBA for long time, and she believes in the work. Also the woman won't likely charge her much, because she is her helper, so I am sure the Mama is saying "why are we wasting money?"*

From House Officers' focus group, March 2011

This acceptance of the TBA reflects, and serves as support evidence of the existence of the wider cultural acceptance among the population studied of herbal/traditional medicine as an effective option for PEC, as determined in the first of the factors discussed in Section 4.3.1.

Within this study the importance of the quality of in-CHER communication as discussed earlier, receives additional support from the evidence involving the decision-making of the hierarchical extended family. The study showed that where these family heads did not receive what they considered to be adequate information about their child in care, then the tendency was to default away from the CHER and

to use the more familiar forms of care, such as private facilities, with traditional facilities also being popular. As stated by the health professionals in an excerpt re-used here for emphasis:

> *"…a strong person in their family like a grandfather or grandmother or something that tells them to bring the child home … If the grandparent is very very stubborn , and* ***we cannot convince them****, they will not even allow the treatments we suggest to continue"*
>
> From House Officers' focus group, March 2011

The specific form these decisions took could not be predicted, as individual families' preferences were variable. What emerges from this is the inability of the doctors to communicate the importance of their protocols successfully, even when compounded by the individual insistence expressed by these family members. This supports how important the family is in the doctor-parent-child communication triad-dynamic at the CHER and vice versa.

4.3.6.4 Summary

This study showed that extended family presence was yet another factor indirectly affecting outcomes through its impact on parental/primary caregiver decision making. The effect of the extended family in decision making was based on their hierarchical roles relative to the parents, which often involved some financial input into the care.

The factor had a dual role regarding the timing of engagement with the services:

a) Where the extended family presence was supportive, this enhanced the effectiveness of a child's engagement with PEC protocols at the CHER.

b) Where the extended family presence was not supportive of the parents, (e.g. withdrawal of finances and involvement in care) then this resulted in the later assignment of the less desirable outcomes.

This non-support was directly traceable to affecting decision-making by parents, which subsequently was found to result in discharges against medical advice. The non-supportive roles of extended family were found to be in turn influenced by unsuccessful in-CHER communication in this population and existing cultural beliefs, two other key factors in this study. Their interaction will be discussed at length in Chapter 5 and further information on cultural beliefs is presented in the following section.

Extended family members were found to be potentially helpful towards supporting the engagement of parents and children with the treatment and payment protocols. However, the involvement of these groups also exerted the potential to exert direct influence on the children being discharged against medical advice, as well as being a direct barrier to a child achieving the other desirable clinical-administrative outcomes showing their successful progress through CHER's protocols.

The quality of the dynamic of the relationships within the extended family was found to be determined within individual situations. Overall, members of the extended family of children admitted to the CHER exhibited a high level of engagement with the processes in the CHER on behalf of the children and their parents, as at least one additional person was available to assist with the different routine activities in CHER.

This study demonstrated the importance of the decisions made among families as following the societal hierarchical authority represented in the cases observed in the CHER. Thus the input of these individuals was crucial to children continuing in care. This study underlined the financial contributions made by the grandparents as an important part of their influence on care. This further highlights the issues surrounding financial support for parents whose children are receiving care at the CHER, as discussed in the previous section on socioeconomic status.

4.3.7 Pre-Existing Cultural Beliefs about Treatment Modalities Presented at the CHER

4.3.7.1 Introduction to the Factor

The literature review on PEC in developing countries had shown this to be a factor which needed the specific variants of such beliefs to be identified among a target population in order to fully explore and understand the decisions reached by parents, and to potentially inform and advise on the forward progression towards better outcomes for their children.

4.3.7.2 Exploring the Patterns of Cultural Beliefs Emerging as Salient and the empirical evidence of effect of the factor

The specific pattern observed among this population was the relatively higher appreciation by families of the importance of these rites and beliefs over and above the assigned treatment protocols. Specific instances in this study involved:

1) A Jehovah's Witness' non-acceptance of a blood transfusion
2) Dominance of cultural requirements for children's attendance at traditional ceremonies, a name-giving
3) Cultural aversion to surgical treatments

One parent clearly stated her specific objections to blood transfusions for religious reasons, as she was a Jehovah 's Witness (see Appendix D, Vignette 8). This mother discharged her severely anaemic child against medical advice in order to avoid transfusions. The severity of the risks following this mother's decision was traced to a mortality outcome within the recounted experience of the health professionals during the focus groups:

> *"Somehow, the baby was improving, later the baby needed a blood transfusion and the father objected to the blood transfusion. …Because of religious beliefs, Jehovah Witness, it became an issue after all this time this blood transfusion. they still objected but the baby was already in the stage of ambu-bagging, so by the time the blood transfusion was in, before they consented to it and baby was already in anaemic heart failure we had got the blood, we transfused but baby never came back and baby died."*
>
> From the House Officers' focus group, March 2011

During this recollection, the on-going contest of opinions resulted in a perceptible delay in the onset of management, and sadly, the child died. This served as a good example of the clear link between parental objections, delayed life-saving therapy and the outcome.

The existence of other cultural practices which resulted in disruption to the stated care and treatment included the example of the parents who took the decision to 'temporarily' remove their child (neonate) from an incubator in the CHER, due to their belief in the absolute necessity of a traditional name-giving ceremony:

> *"…one of the main causes of DAMA among the Yoruba tribe is the 8th day naming ceremony where a child even if on oxygen may be snuck out of hospital or have the nursing staff threatened! They say 'Matron no be your pickin, release am or na fight!' [Matron this is not your child, release him/her or there will be trouble]" By the time they come back now, the child will be almost blue."*
>
> From conversation with the Chief Nursing Officer September 2010

As seen in this excerpt, these events were clearly considered very important to the parents; however, the child had been receiving oxygen and this presented a clear identifiable risk for mortality and morbidity to that child from having their care interrupted. The resistance of the parents to the advice in this instance was extreme, whereas in other examples the parents were found amenable to advice.

One example of the impact of such beliefs being successfully addressed involves one of the children whose mother was interviewed:

> *Mrs FSH sees me and waves a form, she is accompanied by her husband, a portly middle aged gentleman in a blue linen traditional suit. "Researcher Doctor! Aunty Researcher!!! We are going home today!! The results are out!" We can do the naming at last, na so these people delay delay us! Thank God o!"*
>
> *Her husband interjects "Thank God, at least the girl is okay now!! Na pickin wey dey alive go get oruko (name)."*
>
> *I ask if they have seen any of her doctors and Mrs FSH immediately turns towards the Consulting room. She almost collides with the Chief Nursing Officer who is emerging from the one of the neonatal wards. The matron smiles broadly, and begins teasing the FSH [a prominent political figure engaged in the wage dispute with the Doctors of the State has a name similar to one of the FSH family names].*
>
> *"You FSH people, pay our doctors oh, or we will not allow you to go!"*
>
> *"Ah but Matron, we are not the ones now! We are not from that branch of the family!"*
>
> *"Ah you dey try us, as the jaundice has gone down, make we see if sepsis dey!"*
>
> *All parents and nurses within earshot along the corridor burst into laughter. The FSH continues to smile broadly, and Dr Nwzk appears and calls over to them to sign their discharged papers.*
>
> *From Observations September 2010- Involving FSH Baby Vignette 12*

This excerpt shows that although the concerns about the importance of the traditional practices for name-giving were very real among parents, some could be

convinced of the relative importance of maintaining care at the CHER until their child had recovered. Even within single family units there may have been some discord about delaying the traditional procedures, as evidenced by the mother's palpable relief at being able to have the ceremony conducted. The father's position elevated the importance of health in this instance and provided the needed engagement with the processes required for completion of the prescribed management course.

The case of HBB (see Appendix D Vignette 15), whose father was completely averse to surgery when he was informed his son needed surgery, serves to illustrate how these beliefs if countered effectively, can result in more desirable outcomes:

> *Mr Adw looks a bit surprised and when Dr Odby, the CHER HO explains what this means (surgery), he refuses flatly. "No oh" "no we will get medicine for it please o]. Dr Odby then explains the consequences of the child not having surgery to the man and Mr. Adw looks over at me and asks "no other way?" "that's what the doctors say oga (sir)". Mr Adw decides he will need to think about this some more. I nod and wish him a good evening.*
>
> *Later that evening, I call the PSU registrar-on- call to enquire about HBB (the child of Mr Ad**e. The reg Dr Ckx, assures me that they have indeed admitted Habeeb and are working him up for emergency surgery this afternoon "we expect him to do well."*
>
> From observations during fieldwork October, 2010

The resulting improved clinician-parent communication as described in earlier served to inform the parent sufficiently and he was able to base his decision on a clearer appreciation of the risks of obeying cultural preferences which meant his son would not receive life-saving surgery. The result was that the child was taken for surgery and reportedly was doing well 24 hours post presentation to the CHER.

4.3.7.3 Summary

This study was able to trace parental/caregiver adherence to specific cultural beliefs of the parents to undesirable outcomes: death and DAMA when allowed to continue unchecked. Health professionals at the CHER reported these beliefs as disrupting engagement with prescribed courses of management. The specific beliefs involved here were a Jehovah's Witness' rejection of essential blood transfusions and the relative importance of a name-giving ceremony over the oxygen-dependent status of a neonate. The study also provided evidence showing that improved awareness of the importance of the treatment protocols could counter an innate desire to doggedly adhere to tradition.

The use of informative communication with parents, which was advocated as helpful in section 4.3.3 by health professionals, was successfully used among the study population to obviate pre-existing parental cultural concerns about the necessity of a life-saving surgical procedure. When this information and the attitude appreciating the severity of illness and importance of the child's steady state existed, then cultural concerns were effectively neutralised in favour of the CHER process being completed as effectively as possible.

4.3.8 The Effects of the Lagos Doctor's Strike on the Children in the CHER

4.3.8.1 Introduction to the Factor

The strike action of the doctors employed and working in Lagos State, which occurred concurrently with this study, began formally on August 9th 2010 and continued until the end of November 2010. This strike action resulted in the closure

of one tertiary hospital, 24 district and general hospitals, as well as over 700 primary health centres managed by the state (LSMOH, 2011).

The impact of this state-wide disruption in available PEC resulted in an acute change in the pattern of attendance of Lagosians at emergency facilities. Some attended the CHER after referral by private care facilities, others attended only because their prior point of public facility referral was unavailable. Although the incoming volume of patients was raised, the bed spaces at the CHER were not increased in number and neither was any expansion to the in-patient facility made. The saturation of available spaces resulted in the boarding of patients within the CHER and the wards. The effect of this was a drastic reduction in patient intake, which was dependant on discharge, referral, and deaths, and ultimately led to the eventual cessation of all new admissions to the facility by the middle of January 2011. The effect of prolonged boarding was a sustained drain on the amenities and available consumables at the facility, over and above the patterns observed at other times.

4.3.8.2 Exploring the effects of the Strike on the CHER Process

> *"Since the start of this strike, the triaging has had to be more...strict. Because we really don't have space to bring in those children. You can imagine a facility with 50 beds receiving over 150 requests a day, what would we have done with them? We had to refer, and quickly."*
>
> From Senior Registrar's focus group March 2011

As shown in this excerpt, the high volume of patients, affected the routine process of direct entry from triage to lying-in care/admission, due to the finite number of lying-in spaces.

> *"Space is a serious issue, we have been sending people away since morning...even small beds are not available for admission" I ask if this is just*

in CHER. "The wards too are totally full". "This is a new thing for CHER to be under such pressure from outside with no outlet available at the Ward level.

A boy aged about 7 years wearing an orange tee shirt enters followed by his mother, a young-ish lady in a spotted blouse and dark skirt, Dr K says "suspected SCD, we'll do a full blood count, but the mother will have to bring her back tomorrow with the results". However Dr K asks "what if there is still no space tomorrow?" Dr Ala agrees it is essential to be realistic about the chances of a bed being available for the child if this becomes necessary. "Get ready to write for her to go either FMC or Military at Yaba". Dr Ala explains to me that the problem is that the large capacity General hospitals in Lagos State "like GH Gbagada now, they are on strike. The available options are the Military Hospital [attached to a stationed battalion on the Mainland Area of Lagos (Yaba)] and [a] Federal Medical centre [on the Island]...or even private hospitals" Turning back to the boy and his mother he says "if he was a smaller child...he needs a bigger bed, ... he cannot even share a large cot.

Dr Ala continues. "we've never had this pattern before ...the CHER full and the wards full , usually the ER is full and the wards are empty!", when i ask why this is he says. "Patients won't normally come here [for ward admission] because it is not a free facility"

From observations during fieldwork, September 2010

This excerpt shows how the high patient volume filled up the wards and in turn created a backlog of children in the CHER who were due for ward transfers. The strike affected the 'expected' pattern whereby the ward patient volume remained low due to costs of care relative to the free Lagos State facilities.

The bed spaces on the in-patient wards and subsequently in the CHER could only become available following patient discharges (home, against advice or death). Children who then occupied these emerging bed spaces had to be relatively the same size or age, due to the variable sized cots in use. This was the problem faced by the 7 year old in the earlier excerpt.

Over the course of the strike it became increasingly difficult to keep track of the proportion of children being turned away from the CHER regardless of their clinical

status, as they were either transferred to still functioning federally funded health facilities or private hospitals, based on the discretion of the clinician and the requirements of the child. The preceding excerpts highlighted the existence of high volumes of patients attending, being admitted to the CHER and subsequently the wards, and the backlog effect this had on further admissions.

4.3.8.3 Exploring the empirical evidence of the Impact of the Strike on Outcomes

An additional important effect of these high patient volumes on the CHER and the children admitted was the heightened demand for the amenities and services available at the facility:

> *This strike is becoming dangerous...Throughout the night there was no light [electricity], they came, gave us light [electricity]*
>
> *There was no light[electricity] and I had to wait . They said it was because of the strike. The fact is even if the gen (erator) is put on, how long do we run it for? LUTH cannot be buying Diesel like that! Then the non-academic people if they become overstretched to monitor gen, what do we do?*
>
> From the fieldwork observation notes: Conversations with the Chief Nursing Officer, October 2010
>
> *We have no oxygen oh" "we cannot take oh". The nurse thanks them and leaves. I ask about the oxygen Dr Ez says "yes, there is no oxygen in LUTH today at all, this strike I feel sorry for the oxygen store people, the whole hospital is on their heads". "You can imagine the demand on them will be so much! What of Surgery and ICU? Soon the resource people from CMAC will have to do something drastic."*
>
> From observations during fieldwork, October 2010

The difficulties with electricity supply at the facility stem from the use of back-up generators employed to cover failures of the national grid. Due to the strike, the heightened numbers of patients led to greater demands on the limited generated power supply across the hospital. The effect of the electricity outages on poorer

outcomes was observed for the children in the CHER where it affected the operation of vital equipment for care:

> *"She was being managed under phototherapy, but they also discharged against medical advice because the mother kept on complaining that the power supply was not constant. I was looking at the serum bilirubin result [wondering], "why is this thing the same?" The mother just said immediately, "there was no light now, there was no light!", so because of that he decided she wanted to DAMA, they would prefer to go to somewhere where they know they can get what he needs"*
>
> From the House Officers' focus group, March 2011

The absence of a steady supply of electrical power meant that the treatment prescribed for the child described was not progressing, and this led to the parent terminating care, and also a sustained period of risk associated with the clinical condition not being properly treated. The absence of essential oxygen also served as a direct source of increased concern for parents. One of the parents of a child who died recounts a direct experience of the acute oxygen shortage shown in the excerpt below:

> "*no oxygen, until this morning...baby crying and crying... "it was after they change shift...the oxygen was finishing...i was shouting 'go and bring another one!' "I even went to the oxygen place to tell them to come...they say I cannot enter"*
>
> From interview with the Mother of the CWDB, October 2010. For further details see Appendix D, Vignette 11

Although this functional failure at the LUTH was potentially contributory to the final outcomes, it was obvious from the history of CWDB that there was some evidence of pre-CHER factors, such as length of time spent at home receiving HBSM, and the severity of the child's clinical status, which also confounded the link to the final outcome. This was directly observed by a medical student:

"we have only observed one death and that was the one we saw just now [the same case I have been watching unfold] and the mother said it was because the oxygen ran out and for over 30 minutes they didn't get another one put on"

"she has been saying the oxygen has been off overnight as well, but to be fair we saw that child when he came in … the child was very very sick ...I don't think it was just the oxygen that was the problem" The girls nod in agreement.

From conversations with medical students during fieldwork, October 2010

Every group of health professionals collectively emphasised that the systemic issues, specifically those associated with the supply of steady electricity, had pre-dated the strike; however, they clearly identified that the increased demands on the services at the LUTH as a whole, served to magnify the deficiencies.

These things did not start today now! NEPA is forever erratic, and there is simply no means of running the generator 24/7. We are feeling it more now, because the labs are running full stream, and the whole place is full because of the Strike. The generator that is on now, has been on all morning. That would not be necessary if the whole place was not so full. We are not even sure if the power scheduling will carry us all, that is why we are on gen for now

From the observation field notes, Conversations with the Chief Nursing Officer November 2010

4.3.8.4 Summary

The Lagos State doctor's strike was traced to undesirable outcomes of DAMA through a series of interwoven mechanisms occurring in response to the attending high patient volume and the outcomes due to the strike were indirect effects of this. The overwhelmed stores and amenities resulted in parents opting out of care, as too did instances of failed communication across institutional barriers by overburdened health professionals. This effect was illustrated earlier in this study by the unsuccessful communication of the impact of the overburdened facilities with parents who then opted out of care. The strike also resulted in an increase in transfers

to other hospitals, whilst this may have been reported as an increased numbers of referrals the primary indications were logistic rather than strictly clinical.

The shortages of essential consumables, caused concern among health professionals and was implicated in at least one death, and contributing to parents opting to be discharged against advice. However, a direct trace between the outcome and the strike action itself would be misleading, as other influential factors were also present, as highlighted in Vignette 11 CWDB.

The high entry patient volume meant that staff, equipment and consumables for triage and admissions were rapidly overwhelmed. The in-patient wards once full, created a backlog of patients awaiting transfer from the CHER. This meant that some children eventually completed their definitive therapies while on admission in the CHER for up to five days, and were discharged without ever entering the wards.

The review of admission trends from June to December 2010 showed how first the 24-hourward transfers dropped dramatically in September (26% from a high of 42%) at the onset of the strike, while overall admissions remained the same, although more children were sent home after care than in previous months.

The key infrastructural deficiencies identified in the CHER were the lack of regular supplies of water and electricity, as well as a scarcity of regularly replenished oxygen.

This study serves as a reminder of how systemic deficiencies of this nature can directly hamper the function of specialised services in hospitals, with the disastrous potential for undesirable patient outcomes.

4.4 Chapter Summary

The research question for this study asked:

What are the factors that influence the risk of mortality and other outcomes among children, within the first 24 hours after admission to a tertiary CHER in Lagos, Nigeria?

The analytical process for this case study, as summarised in this chapter's introduction, led to the evolution of the desired social construct representing the collective experiences of parents, children and health professionals interacting within the CHER in Lagos between June 2010 and March 2011. From the analysis, the eight factors identified within the boundaries of the defined case were presented and discussed according to the relative timing of their impact along the PEC process:

i) pre-CHER:
    a) Home based care and remedies for acute illnesses
    b) Care-seeking activity at private care facilities
ii) in-CHER:
    a) Communication during interactions between parents and health professionals
    b) Parents with a low socioeconomic status
    c) Difficulty in making payments as experienced by parents during the admission process to the CHER
    d) Extended family presence in the CHER
    e) Pre-existing cultural beliefs about treatment modalities presented at the CHER
    f) The effect of the Lagos doctors Strike

Each of these factors was identified within the chronology of the PEC seeking pathway culminating in the first 24 hours at the CHER. Each of the segments exploring these factors introduced their patterns of presentation at the CHER and within the PER literature where previously identified. These segments presented a critique of the evidence of effect for each factor on children in order to influence progression towards:

1) Undesirable PEC outcomes: Death, discharged against medical advice.
2) Desirable PEC outcomes: e.g. admitted to CHER, transferred to wards, discharged home.

The study was able to tease out the less desirable nature of onward referral due to logistics at the CHER and this outcome was so designated in the summary presented earlier.

These critiques were presented discursively; using supporting and contrasting evidence and illustrated using direct excerpts, supported by access to longer case vignettes which are available in Appendix D as required. Each evaluation of a factor was concluded with a summary stating the influence of the factor, the outcome affected and emphasising all the identified mechanisms and intermediary factors evidenced within the study data.

The findings were also simplified for easy perusal using a summary chart preceding the detailed discussion which offered a summary of these findings, named the identified factors, and highlighted the key intermediary mechanisms traceable between a factor and the affected PEC outcomes within the case study evidence. The modifiable nature of some of the factors within CHER itself was also identified, as

too was the involvement of these factors in the delayed progression along the PEC pathway, prior to affecting the named outcomes.

Finally, the centrality of the role of communication within the CHER was uniquely identified as directly affecting PEC outcomes and also as an intermediary modifying the effects of other factors. This presents a key feature for discussion in the following chapter.

Chapter 5 presents the final interpretation of the meaning of these findings relative to the overall study. It is the final discussion which serves to complete the analytical strategy as stated earlier. This includes a comparison of the empirical patterns of outcome causation from the CHER with existing patterns of influence among such factors as presented in the literature review. This re-examination of the existing literature in light of the emerging findings in the CHER played an essential role in establishing the contributions of this study to the field of PEC focussed research in developing countries

Chapter 5: Discussion and Conclusions

5.1 Introduction

Holistic views of health accept that individual patients' overall states of health are the result of complex interactions between social and biological variables in their lives and experiences (Engel, 1977, Bronfenbrenner, 1979, Mosley and Chen, 1984). It is therefore essential when planning interventions for encouraging more desirable health outcomes, to identify the factors involved within these interactions.

This study asked the question:

> *What are the factors that influence the risk of mortality and other outcomes among children, within the first 24 hours after admission to a tertiary CHER in Lagos, Nigeria?*

Chapter 2 presented a summary of how conceptual frameworks had been historically used by researchers to appreciate the different social, biological and environmental factors implicated in child health outcomes and health service engagement. This helped partially explain why mortality rates in developing countries had remained relatively higher than the global norms, placing a needed emphasis on the elements of the characteristic social context of factors such as poverty, poor access to care facilities, and low levels of overall education. That literature also exposed the global research focus examining population-wide patterns of the highlighted factors, such as social, demographic and healthcare behaviours, for monitoring the progress of regional and global targets for improved child survival.

Molyneux (2001) was one of the first authors to call attention vigorously to the need to examine, quantify and understand in-hospital mortality patterns among

children in developing countries. This proportion of children accessing hospital-based (curative) care had been under-represented in the bulk of the research literature examining mortality causation. This had inadvertently occurred due to the desire for emphasis on examining population-wide patterns towards boosting uptake of preventive interventions. The principal finding of concern by the front-line practitioners and researchers in the SSA region was that PER facilities frequently recorded over 50% of all hospital-based mortalities occurring within the first 24 hours of admission to PEC in developing countries in SSA. These authors drew much-needed attention to the demands and requirements of the surprisingly under-measured proportion that makes it into a hospital. Global estimates have shown that this attention is timely, due to the documented rising number of childhood deaths among these populations needing hospital-based PEC, particularly due to acute trauma (Mathers et al., 2008). Consequently, this research's focus on the fraction of children at potential risk for poor 24-hour outcomes in PEC emerges as being extremely relevant.

The pre-existing research literature on PEC outcomes in developing countries was largely cross-sectional in design and examined the patterns of attendance and presenting clinical complaints of children in hospital-based PEC facilities in developing countries. The research also raised awareness of the existence of additional complex social, cultural and organisational issues, potentially affecting outcomes of care within the populations attending PEC. The explored conceptual frameworks allowed these issues to be identified as key factors relevant within the chronological PEC process, representing (as seen in Chapter 2 section 2.5 Discussion):

a) Social factors identified within the PEC pathway.

b) Clinical factors associated with outcomes of PEC.

c) Institutional factors associated with outcomes of PEC.

d) Delay as an important factor (group of factors) affecting progression through the pathway.

The limitations of the existing literature identifying the types of factors affecting PEC outcomes involved the relative dearth of research methodologies affording deeper explorations of the individual experiences of attendees within PEC. Also lacking were the descriptions of individual factors within each setting provided in any detail. Furthermore, in spite of the immense potential for the exploration of sociocultural and behaviour components among PEC attendees, there was a considerable dearth of anthropological literature examining the routines and events within hospital-based PER from these countries. The available information on the multiple types of factors and their influence on outcomes were therefore limited. This partly explained why there had been a limited development of interventions addressing the stated concerns by SSA-based experts regarding the high proportions of poor outcomes observed within 24 hours of entering hospital-based PEC.

This case study was aimed at acquiring this much needed deeper understanding of the specific risk factors for children in hospital-based PEC, through the real-time evaluation of the processes within a named PER. The research site was the CHER of the LUTH in Lagos, Nigeria, one of only three facilities providing tertiary hospital-based PEC for the >800,000 children living in Lagos (LSMOH, 2011). PEC at the CHER LUTH is administered as a designated part of the hospital's service and is supported by the physical and functional infrastructure of the LUTH (Chapter 1, section 1.4.4 The CHER at the Lagos University Teaching Hospital Lagos)

The decision to utilise the experiences of children being admitted to the CHER in Lagos-within their first 24 hours of care-was largely prompted by the need for information that had emerged from the personal experiences of practitioners of PEC within the setting. The constraints of the previous literature regarding the dearth of experiential information in such settings, called for this study to adopt a social constructivist orientation. This emphasised the importance of examining the realities of organisational and individuals' roles within the PEC process among the named population and their day-to-day experience of said process. Consequently, the study explored- reported and directly observed- involvements and happenings in order to acquire the necessary detail on both physical and social factors within this poorly understood process.

The adoption and application of case study as the primary research design was carefully documented, with the overall strategy aiming to ensure rigour in balancing the gathered experiential perspectives by triangulating different sources of information. The study, in keeping with the case study design's ability to incorporate pre-existing data with contemporarily acquired primary data in a bounded system such as a CHER (Yin, 2009), also examined cross-sectional survey demographics from the studied population, similar to the previously published methodologies within this field. By acquiring an awareness of the population demographics in this manner, the study could then be appropriately orientated in time relative to the expected population's patterns in the studied setting. In so doing, this current study represented the type of crucial advance recommended by Molyneux (2001) towards a real-time, experiential focus. The study also gained the benefit of appreciating where the explored experiences fit within the wider established patterns at the research site in Lagos.

A purposeful sampling strategy for identifying research participants resulted in the selection of a portion of the attendees at CHER as participants for direct observation. In total, 99 children were observed during their attendance, of which eighteen parent-child groupings were selected for full-length interviews. This selection was based upon a subjective assessment by the researcher, of the fullness of her access to a child and their parents' experience: preceding, leading up to and in the CHER, within the window of opportunity afforded by the study. A series of four focus groups, each involving a discrete group of health professionals, was also organised as part of the study. These represented the four key staff cadres involved in the daily, on-site clinical decision-making at the CHER.

By acquiring information from these key groups, the constructivist approach was able to maximise the multiple perspectives from these participants. This strategy provided multiple lenses through which to examine the PEC process at the CHER. The methods selected for collecting data were sufficiently flexible to allow each participant to express their own realities without imposing any pre-formed assumptions. A great source of encouragement for the researcher throughout the study was the very high proportion of consent and relative acceptance by participants, closely followed by their ability to be open about their experiences during such a difficult period of their lives.

The principal analytical task in this study was to consider constantly that the process of PEC involved multiple interacting risk factors in the causation of mortality and other outcomes, and that these interactions were comparable to those previously set out in the conceptual frameworks focused on the PEC process and child health outcomes in developing countries. However, the study did not set out to evaluate these interactions specifically, even though the exposition of the factors

would doubtless intimate some parts of the interactions involved. The literature review had revealed a limited awareness of the identity and nature of the relevant factors in such settings, and none whatsoever published regarding this specific site. It was therefore this need to know which types of factors were relevant in this previously unexplored population, that inspired this study to adopt its position as a 'first look' at this type of setting. This study is the first of its kind based on the population of the PER facility in Lagos, and from the findings of the literature review, it is poised to be uniquely placed within the existing PEC literature from the SSA region as well.

Thus, the aim of the study was to identify which factors in the study setting would emerge as influential towards outcomes of PEC, whilst also acknowledging the existing theoretical patterns of causation (Yin, 2009). The importance of continuing on using this current study as a basis for future research design suitable for evaluating the interactions is discussed later in this chapter- where outlines of the plans for future research are presented (section 5.3.4 Implications for future research).

The analysis applied an inductive-deductive approach involving an open process of allowing the emergence of codes, categories and themes from the observation data (dataset O). These were then arranged into a logic matrix based on an appreciation of the expected chronological patterns, and of the developing relationships between participants and the different environments encountered during PEC seeking and the in-CHER experience. The interview data (dataset I) were then subsequently examined using the matrix as a framework to arrange key groups of evidence from the represented perspectives into wider coalescing categories, leading to the emergence of 8 comprehensive themes. A careful critique of the descriptions of these

themes revealed that they represented discrete, named factors traceable to PEC outcomes. The central assertion of the effect of each factor's effect was then tested against relevant data from the remaining dataset from the focus groups (dataset F); this direct comparison helped determine whether that evidence was in favour of or contested the assertion; together this constituted active triangulation of the data.

This study identified from this, a series of 8 factors, which played a demonstrable role in the occurrence of the undesirable outcomes of death and DAMA among the studied population at the CHER. Each of these factors was examined in detail, identifying the outcomes affected and the intervening mechanisms (see Chapter 4 section 4.3).

This Chapter represents the final stage of the interpretation of the empirical data collected during this case study. This primarily involves comparing the empirical patterns of association or suggested influence on outcomes against the wider evidence of effect. In addition, conclusions are then drawn regarding the novel findings of this study and intermediate references to the strategy for publication and dissemination of the research are made. The chapter concludes with recommendations for future practice, policy and research.

5.2 Factors Identified as Influencing the Outcomes

Chapter 4 presented the eight factors, which emerged with a demonstrable influence on one or both of the undesirable outcomes for children at the CHER, namely: death and DAMA, while others were traced to retarding progression towards the more desirable outcomes. The factor 'pre-existing cultural beliefs about treatment modalities available at the CHER' was the only factor identified within this study to have a demonstrable effect on all the undesirable outcomes whilst also

retarding the desired progression into clinical-administrative outcomes. Chapter 4, Table 4.1 presents a summary of the factors and the outcomes they were traceable to using the empirical evidence from this research.

"Home based self-medication (HBSM)" and "Attending care at private facilities" were found to have some influence on death among the CHER population. DAMA was found to be influenced by "the Lagos State doctors' Strike" , "presence of the extended family" and "In-CHER communication between parents and health professionals". All of the factors identified as affecting DAMA were also identified as barriers to progression towards administrative outcomes- this progression being regarded as evidence of better survival. These barriers effectively constituted different components leading to a "Level 3" delay from the perspective of Thaddeus and Maine's 1994 model, which represents: The delay in receiving adequate and appropriate care within the PEC facility.

The following sections of this Chapter discuss the influence of these factors on outcomes at CHER reflected against the previously examined patterns from literature reviewed in Chapter 2. These factors are presented relative to their impact on the progression through care, where the desired direction of movement along the PEC pathway is towards rehabilitation (see Chapter 2 Kisson and Goldman's model). The order in which they are presented first highlights those factors that influence multiple undesirable outcomes, specifically death and/or DAMA. As Mosley and Chen (1984) demonstrated, the health outcomes for children exist along a risk spectrum, whereby each child transits through several states towards either mortality or survival. The PEC pathway of Kissoon and Goldman (2007) demonstrates the importance of the chronological transition towards a defined state within care, and

end-points are dependent on the timing of the observation-, which for this study was the end of the first 24 hours in the CHER.

5.2.1 Factors which Influenced the Risk of Undesirable Outcomes at the CHER

5.2.1.1 The Influence of Pre-Existing Cultural Beliefs about Treatment Modalities on the Outcomes of Mortality and DAMA

The study demonstrated that parental and caregiver decisions within care based on pre-existing cultural belief, specifically in respect to blood transfusions and the relative importance of name-giving ceremonies, exerted an influence on the outcomes of DAMA and death respectively. This was mediated by causing delayed pre-facility and in-facility engagement with defined and outlined care processes. This supports the findings of the literature review, which identified parent/caregiver resistance to the transfusion and donation of blood and blood products among the cultural beliefs that affected the acceptance and efficient transfusion protocols in Enugu, Nigeria (Ibeziako and Ibekwe, 2004).

Gillon (2000) identified the baseline conflict in the issue of Jehovah's Witnesses regarding their refusal of blood transfusions, as being between a questionable rationality, autonomy and religious observance. Bock (2012) in an exploration of the theological and scriptural foundations for refusing transfusions of blood and blood products, recommended that the decision making processes of Jehovah's Witness parents could be considered and respected as rational choices towards informed consent, thus placing the impetus back on the physician-caregiver interaction. This was also an identified factor in this study, and is explored as a separate issue (in

section 5.2.1.2, The influence of In-CHER communication between Parents and Health care Professionals) with stated ties to this current factor in a later section of this chapter.

The Jehovah's Witness parents' resistance in the examples cited within the findings in Chapter 4, was found to not have been moderated within the clinical consultations among this studied population: one child died whilst awaiting a transfusion and yet another was taken out of care. Such family decisions appeared to have been taken and adhered to within the CHER. In the directly observed example, a limited level of communication with the health professionals attending regarding these decisions was noted. It was unfortunate that this study itself did not engage effectively with the mother before she decided to leave with her child. This identified a potential limitation within practice, where the question arises as to whether perhaps ensuring she received an evaluation/consultation involving extended contact and communication may have produced a different response.

This case study was able to demonstrate that in spite of health professionals' awareness and concerns about parents' stated cultural beliefs, this did not appear to have engendered useful practice to counter-act parental decision-making based on such beliefs. This study was not equipped to establish an objective viewpoint about these beliefs from the parents whose children had undesirable outcomes, prior to timing of the child's admission. However, the study did cite examples of situations where the application by health professionals of improved techniques and principles of communication addressing stated parental concerns, positively influenced outcomes, allowing strongly felt cultural beliefs to be set aside for the benefit of the child. This suggests the potential importance of the role of communication regarding

decision-making within the CHER and this isexplored further in the following section.

5.2.1.2 The Influence of In-CHER Communication between Parents and Health Professionals on the Outcomes of DAMA and Progression through Care

The gaps in communication between parents and health professionals at the CHER resulted in DAMA decisions by parents and these are shown in the outlined examples presented in the previous chapter. The literature review reported the ways in which prior unsatisfying communication with health professionals resulted in parents' decisions not to revisit a specific facility (Molyneux, 2001). The study also showed the impact of communication on outcomes as dual, with potential to either enhance or retard progress through care, within the CHER. In addition, this study, by engaging with contemporary experiences in the CHER was able to delve more deeply into these communications and identify key components of poor communication, specifically:

1. A lack of transmission of information (on systemic/institutional barriers) to parents
2. The apparent dismissal of parental concerns by health professionals

From a study of a general practice in the UK, patients were identified as preferring being offered more information about the clinical decisions being made towards the treatment offered, rather than less information (Vick and Scott, 1998). This study agreed with this finding but highlighted that in this environment, the health professionals themselves were aware of this deficiency in current practice. A more recent review of the literature showed that parents in hospital perceived health professional attitudes as limiting their engagement with their child's care (Power and

Franck, 2008). In this current study, the parents specifically described a sense of being isolated from the treatment decisions made by professionals. Consequently, some parents would, with the support of their family or other social groups make alternative decisions, leading to removing their children from PEC, as cited in examples in Chapter 4 (section 4.3.3 In-CHER communication between Parents and Health Professionals). The implication of this finding underscores the importance of the roles of professionals' communication in preventing DAMA.

Effective clinician-patient communication has been established as being correlated with desired and improved health outcomes within the literature (Stewart et al., 1999, Stewart, 1995, Rao et al., 2007). Consequently, the absence of effective communication has, by virtue of directly leading to missing information in both directions of communication, led to missed opportunities for an early consensus in a patient's management and potential alienation from the treatment process (Safran et al., 1998, Doyle et al., 2013).

This study certainly underpinned this association, highlighting the direct role of the absence of desired information for parents specifically within the primary consultations and follow up communication in the DAMA decision. From the conceptual frameworks reviewed in Chapter 2, the role of in-CHER communication can be identified as characterising the event of engagement within utilisation of the PEC service. The components of effective communication are key factors in establishing a mutual appreciation of the patients' needs within health service utilisation. Brundage et al. (2010) identified that the communication processes during the consultations encompass latent, yet frequently unexpressed, goals of the parents/patient. Over the course of the interactions with professionals during care, these goals are advanced, either overtly or covertly, within the context of their needs,

beliefs, values, and emotions. Where these goals do not appear to be in line with those of the treating health professionals, conflicts usually occur. Using the example of parents' beliefs of the importance of the name-giving ceremonies interacting with their goal of having their child treated, it can be seen how the treating professionals at CHER may seem opposed to their expression of their need and belief as parts of the goal. This study thus underpins the value of the attending physician or treating professional harmonising these goals through using effective communication of essential information.

There is limited evidence on the effectiveness of the types and content of training for physicians in communication towards improving patient outcomes (Moore et al., 2004, Griffin et al., 2004, Kiesler and Auerbach, 2006). However, a further review of the literature suggests the greatest potential involves intensive training, defined and delivered within the needs of an individual service and identifying the needs and limitations of practitioners (Rao et al., 2007). Street et al. (2009) demonstrated that important components of effective communication leading to better health were greater patient knowledge and shared understanding within communication with patients.

The precise mode of design and delivery of interventions, however, can only be decided within the context of each consultation (Barth and Lannen, 2011). Harrington et al. (2004) demonstrated the value of involving patient participation and this resonates with this study's establishment of the importance of ensuring parents are 'carried along' as indicated by the CHER professionals.

5.2.1.3 The influence of Home Based Self-Medication on the Outcome of Mortality

In this study, the influence of HBSM on mortality was traced through:

a) Exposure to questionable prescribing practices,and a reported adverse drug reaction.

b) Delayed decision making to seek care outside the home

On comparing this with the domains of influence suggested by the component models within the guiding framework of this study, it can be seen that the influence of HBSM on the outcome of mortality is put in play first and foremost by the prevailing perception of safety of the practice. The subsequent effect can be observed within this study, on delaying both phases of HCSB: a decision not to formally seek care via entry into the PEC pathway, consequently impeding the utilisation of the available PER services. The direct biochemical effect of the medications used (incorrectly), and/or their lack of desired effect, additionally present a proximate, as cited by Mosley and Chen (1984), and are cause for concern, thus further reinforcing the need for entry into a PEC facility.

The study supported that the proximate biomedical risk from the adverse reaction was gauged severe enough to warrant urgent measures on arrival at the CHER and was supported by unanimous professional opinion specifically regarding non-prescribed over the counter medications. Many developing country populations report high levels of HBSM (Jain, 2011, Bate, 2008) and as discussed in Chapter 2, the practice is accepted and utilised by as many as 40% of parents among surveyed populations in Africa, South America and Asia (Santos et al., 2009, Oshikoya et al., 2007, Adegboyega et al., 2005, Oshikoya et al., 2008). Additional research

examining the behaviour among residents of developed/industrialised countries in diaspora in industrialised countries with previous experience of purchasing over the counter medications and utilising HBSM, showed a demonstrably higher likelihood of HBSM (Mainous et al., 2009).

The key reason for the pervading perception of the HBSM as safe and appropriate within the community was the widespread belief of the success of HBSM. This study showed that the parental and community confidence in anecdotal knowledge of HBSM was steeped in a cultural familiarity with previous self-reported HBSM, as well as with clinical signs of common, albeit serious, illnesses, such as fever associated with malaria. This resulted in virtually immediate responses to such signs and symptoms via HBSM, using both traditional and orthodox antimalarial medications procured over the counter.

Jain (2011), in a recent systematic review of reasons for this practice, also identified community input from experience or community members' prescribing as a key factor for HBSM. The findings of the review by Jain also indicated the importance of the perception of the relative convenience of HBSM compared to attending care as being a major overarching theme explaining this behaviour. Specific examples included the relative ease of access compared with physician-prescribed care, a desire for individual's control of care, 'community prescribing' following sympathy by family members, a lack of time to attend hospital, high consultancy fees and the availability of over the counter medications. This study, while identifying some appreciation of the convenience of availability of the medications used, found that the population more strongly reflected a confidence in their abilities to effectively apply HBSM. This was exemplified in the instance where one parent described an acute febrile illness as 'a simple fever'.

This study identified a relative lack of awareness regarding the attending risks of drug allergies, side effects and potential adverse effects of the utilised medications among the population, and many of these medications were considered 'common' by participants. Jain (2011) specifically stated links between population levels of ignorance and the extensive advertisement of over the counter medications as potentially influencing the perception of HBSM as being relatively convenient, compared with acquiring prescribed treatments.

This study also agrees with the previous findings across HBSM literature from developing countries (Jain, 2011) by emphasising that the identified ignorance must be considered separately from levels of literacy, as different levels of literacy among mothers did not reflect differences in their perceptions of HBSM among the studied population. This inability to support any direct link between higher levels of education and an intact awareness about drug use safety, has previously proved difficult to establish in research utilising descriptive designs. Indeed, this current methodology was unable to task its data towards establishing statistical associations between such variables, due to the size and nature of the sample examined in detail. However, what this study design uniquely afforded was an indication of the compartmentalisation of awareness of the risks associated with drug safety in HBSM. This was observed in both educated and uneducated mothers, and only not in medically trained participants or those with direct professional experience with pharmaceuticals.

HBSM presented a source of delayed initial engagement with the PEC pathway by affecting the decision making to seek care, as such representing a 'type 1' delay after Thaddeus and Maine (1994): 'the delay in making the decision to seek care when experiencing an emergency.' The delaying effect of having started HBSM in

this population was due to parents' hopes that the practice would be successful, and spending vital time waiting for improvements at home delayed access of these children to definitive care involving accurate dispensing and diagnoses of the primary acute conditions.

In spite of the relative risks associated with incorrect self-medication, the active promotion of HBSM in both developing and industrialised populations has been widely advocated towards the reduction of high volume, non-essential attendance on health services, empowering individuals to control their ease of access to treatment for chronic and minor drug taking needs. Afolabi (2012, p.344) states:

> "Self-medication is a necessary and important aspect of primary healthcare which if properly managed could be incorporated in the healthcare delivery system to reduce the burden on the secondary and tertiary level so that attention could be focused on the more serious health problems."

In examining the evidence supporting pathways for safe HBSM, four basic parameters were identified as important when considering the use of medications safely. Jain (2011) proposed that these included:

1. The properties of the drug
2. The formulation relative to safety from dependence
3. Accessible information about the drug
4. Patient compliance

From this it can be seen that attitudes to drugs must conform to an understanding involving both drug safety and appropriate roles in being 'medicated', especially regarding compliance, which implies accepting the recommended plans of usage (Jain, 2011).

This current study indicated a systemic lack of informed drug-safety awareness among the CHER population and the resulting potential for misuse, i.e. using an over the counter product for a legitimate medical reason but in higher doses or for a longer time, thus supporting what was already known about HBSM involvement in the risks of poor outcomes (Jain, 2011).

As this research identified the nature of the existing perception of HBSM among the population, a primary concern is therefore how to exchange the existing set of attitudes for the desired ones following the provision of information about this practice. A non-randomised controlled trial conducted by Maldonado et al. (2007) demonstrated a significant reduction in misconceptions about drugs used for HBSM following the use of a composite educational intervention designed to improve awareness of medicines' side effects. However, the study report established that the intervention was unable to replace what individuals considered their knowledge of how to take care of their health.

Ryan et al. (2011) in a recent Cochrane review identified the relative weakness of the sole reliance on educational interventions for targeting medication use practices as a whole among consumers. Their evidence placed more emphasis on utilising multiple target interventions focused on education and information, while providing additional social incentives, such as alleviating the financial burden for consumers, and providing skills training and individual counselling on the drug use practice of concern. This current study suggests that parents at the CHER were potentially receptive to the provision of information on drug adverse reactions. This demonstrated the potential for adjusting the perceptions of HBSM using basic information, as the minimal information provided during the conversations concerning this was found to elicit surprise and concern from parents.

This study strongly pointed to the need to identify and expand the promotion of the baseline parameters for safe, culturally acceptable advice on what to do at home in the event of an acute illness, as suggested by earlier literature (Jain, 2011). It is essential that studies such as this, which identify the absence of information defined by parameters 1-3 as advised among a population, are made available to policy planners who are currently weighing the practical concerns raised by Afolabi (2012) concerning the over-burdened services. This information is of priority importance in order to prevent a policy practice disjunction where simultaneously there is encouragement of HBSM to overcome the pressures on existing health services, which derails the drive to foster informed, rapid and active engagement of health services and facilities, in the event of acute childhood illness. This is of special concern in developing countries where limited resources are in constant tension with the need to support more effective health service engagement.

5.2.1.4 The Influence of Care-Seeking at Private Facilities on the Outcome of Mortality

In this study, the influence of attendance at private practitioners for PEC was found to influence the mortality outcome through:

a) Exposure to levels of expertise with unknown value compared to what is available at the tiered levels of care in the public sector (primary, secondary, tertiary).
b) Presenting a direct delay to attendance at the CHER.

Health seeking behaviour models identified the selection of alternative services for care as important components to be considered in relation to the eventual outcomes of care. The attendance at private care was within the experience of two-thirds of the

children whose parents were interviewed at CHER and thus characterises this as an important fixture within the PEC process in this environment. The attendance as a whole constituted a 'level 2' delay, 'The delay in reaching an appropriate facility once the decision has been made to attend care.'

Health professionals at CHER reported concerns that the quality of care at private facilities may not have been as good as that expected for first level emergency care for children, and that this may have been linked to children's deaths. A further level of delay related to the quality of care at private facilities which may have been the failure of timely urgent referrals of cases that fell beyond the facilities' expertise.

The study established that the population attending the CHER, primarily engaged with the intervening stage of private care based on the relatively positive perception of services at these facilities. This perception was based on previous experiences of successful engagements with the providers, with whom the parents/caregivers felt familiar, and whose facilities were located closer to their home addresses. Previous literature exploring reasons given for patients preferring private practitioners in these countries have involved better perceived receptiveness of the practitioners (Pongsupap and Lerberghe, 2006).

It was interesting to note within the studied population that the concerns of health professionals (about the quality of care of private facilities) were not shared by parents. Some professionals were able to objectively identify the existence of so-called 'good' private facilities, although they did note the high costs of care at such facilities. Overall, the question of levels of expertise raised was a primary one, with a need for more specialist availability of these facilities. Unfortunately, the limitation

of this study to the CHER precluded further confirmation of this, which certainly raises questions regarding means of allaying these concerns.

This study served as a reminder that the use of private facilities for acutely ill children in developing country settings does not exclusively occur in hospital facilities, with private care nurses consulting at home within the population. As described in Chapter 1, informal private providers, for example drug hawkers, are frequently used sources of healthcare in developing countries. These groups have been identified as the source of counterfeit or substandard medications in these populations (Bate, 2008). Although this study suggested a privately prescribed drug was of some concern, it was difficult to link this to the outcome, without considering the attending delays caused by the use of such a practitioner.

A recent systematic review has shown that in spite of relatively higher survival rates in private facilities, treatment was more likely to be incompletely administered compared with public practitioners (Bojalil et al., 1998, Ogunbekun et al., 1999). This study offers an explanation for this pattern, as in order to complete treatment private practitioners would refer to the CHER in spite of having potentially been obliged to do so earlier in the course of the illness. Consequently, fatalities and other undesirable outcomes were more likely to be reported within the demographics for the CHER and other referral centres. The specific cause of this, as unanimously suggested by the health professionals when discussing private practitioner care, was the relative dearth of sufficient qualified personnel for PEC at these facilities.

Private care attendance in developing countries has been shown to hasten the access of children of wealthier parents to high quality services and to improve levels of access to essential medications relative to their poorer peers, thus creating a

socioeconomic gradient of outcomes (Schellenberg et al., 2003, Victora et al., 2003). This study identified the existence of a similar potential for such a gradient, as poorer children had attended private care often delivered by individuals or rendered on a charitable basis with rapid referrals to CHER or other public facilities. Attitudes towards private facilities regarding adjusting the duration of attendance based on financial motivation received some attention but the study was limited in access to such opinions as there was no means for corroborating these from within the implicated facilities. This study identified as pertinent issues:

i) The delay caused by the time spent during private care attendance.

ii) The delay caused by the timing of the private facilities' engagement with the upward referral process.

This unclear engagement with the established health system for emergency care mirrors the problems highlighted following the use of non-integrated private emergency transport services (Roudsari et al., 2007). The lack of integration of private services into the prevailing health systems suggests the existence of an important public-private policy disjunction, with no clear benefit to the population (Roudsari et al., 2007). This is the situation observed in Lagos between private facilities and the CHER and represents an area for greater investigation towards the integration of these facilities within the defined pathway to care.

Private hospitals in developing countries frequently do not adopt the upward-referral process involving public service facilities (Hensher et al., 2006). This is because the motivation for offering varied levels and specialities of medical services differs from instance to instance among these facilities (Hensher et al., 2006). A potential solution for this involves the implementation of private-public partnerships

in the selective delivery of named services within overall emergency care delivery. It is believed this will encourage bilateral growth in these sectors through encouraging healthy competition. The limitation of this of course is the excessive demand on the limited available expertise within these countries. In conclusion, there remains scope for maximising the positives of private practice, such as contrasting access between the public and higher quality/'good' private facilities, as has been piloted in Barbados and South Africa; however, definitive evidence of the effectiveness of these partnerships remains to date rudimentary.

5.2.1.5 The Influence of the Lagos State Strike on the Outcome of DAMA

The strike action by the Lagos State doctors directly resulted in a raised level of demand for PEC services at the CHER at LUTH. This was due to the suspension of all services at secondary and tertiary facilities within Lagos State. Of the three remaining tertiary level facilities functioning in the state at this time, the LUTH, the Federal Medical Centre Ebute Metta and the Military Hospital at Yaba, only the CHER at LUTH possessed a children's emergency department staffed exclusively by paediatric specialists. The resulting rapid increase in demand on the CHER services produced a dynamic influence over admission patterns, with an initial increase followed by a sustained plateau as the facility became overwhelmed. The definition of the overcrowding applied in this interpretation involved the valid measure of clinician opinions, which have been used as a primary validation measure in other literature (Hwang et al., 2011).

This disruption to patient intake patterns primarily led to the overcrowding of the PER. Other reasons for ER overcrowding identified in systematic reviews of the

literature include a high volume of non-urgent visits, ‘frequent-flyer’ patients, the influenza season, inadequate staffing, inpatient boarding, and hospital bed shortages (Hoot and Aronsky, 2008). This study specifically identifies this location specific risk following selective strike action by health professionals within geopolitical zones or states.

The influence on the outcome of DAMA was traced indirectly within this study, and was mediated through the absence of essential equipment and bed spaces magnified by the increased demands on the facility. Parents becoming increasingly concerned about their children opted to remove their children from care. These decisions were also found to be mediated through low levels of information from health professionals about the existing limitations, which limited the potential for jointly determined solutions on a case by case basis. Indeed, had situations been deemed untenable within the context of a successful consultation/communication triadic interaction, the children would have been transferred to other hospitals, rather than leaving PEC care. These effects mirror those identified following overcrowding (Hoot and Aronsky, 2008, Bernstein et al., 2009):

1) Transport delays
2) Treatment delays-specifically time to treatment for patients with time-sensitive conditions ambulance diversion
3) Patient elopement
4) Financial effects

The previous literature also implied that there were raised risks of patient mortality (Hoot and Aronsky, 2008, Bernstein et al., 2009); however, this study was only able to add to this by suggesting that this factor may have been involved as one of a group of factors. As only a single death implicated the scarcity of amenities due

to the strike, this also indicated the influence of other factors, HBSM and private care attendance in particular.

The strike's impact on the PER population was mediated through delay the routine process of direct entry from triage to lying-in care/admission, due to the finite number of lying-in spaces. This was similar to the sudden out-of-pattern demands placed on services during population-wide disasters, such as earthquakes, hurricanes, and armed conflict, known as a 'site surge' (Hick et al., 2004). These events, which represent raised levels of demand on facilities through large increases in patient volume, require preparedness, and an improved capacity and capability for such events at the level of the facility and the community (Hick et al., 2004). As this was not a disaster situation, the existing series of preparations made at the CHER were insufficient for most demands, for example the scarcity of oxygen was one issue which could not have been prepared for.

Central guidelines for making key critical care resources available during a site surge have proven to be effective, both in delivering care to the large influx of patients seeking urgent care, and in protecting the integrity of a hospital's infrastructure (Eastman et al., 2007, Rubinson et al., 2008). One option for addressing the issue of overcrowding itself has been examined in a systematic review by Bullard et al. (2012), which suggested the implementation of a rapid assessment zone. Such an area, while appearing to benefit low acuity patients, may require additional research to support it. During this study the institution of a triage nurse was reported as speeding up the triage process, as supported by Rowe et al. (2011), and the subjective reports of success indicate this approach could be of use at the CHER.

Parents' responses to the scarcity of amenities and/or bed spaces appeared fraught with many expressions of distress. This study showed that the hospital/CHER management did not inform patients about either the external causes or local implications of the strike. The debate concerning the ethics of striking physicians against their rights as workers to strike remains strongly polarised (Cunningham et al., 2008, Mawere, 2011). Even within the study population, professionals and patients did not agree on the justifiability of the strike.

The study provided the rare opportunity to observe the indirect effects of a wide-reaching strike action on an initially non-striking facility and the progressive effect when the unions of workers in the secondary facilities also went on strike. As shown Chapter 4, this study was able to describe the changes in patient patterns while the facility was experiencing the surge. Compared with the pre-strike patterns from June and July, patients admitted from August onwards went home or were referred, and fewer of them went to the wards. When the facility itself began to experience closures, even more went home.

The timing of this study during the strike allowed existing systemic issues involving the scarcity of amenities and equipment to be more apparent as problems within the in-facility stage of PEC. The literature review showed these to be common institutional problems in PER in developing countries and to also include (Ceviker et al., 1995, Hamid et al., 2005, Magree et al., 2005, Meier and Tarpley, 1998):

a) Poor water supply for laboratory services

b) Limited facilities for confirmatory laboratory testing for blood cultures

c) Limited radiology facilities for confirming trauma and surgical signs

This study showed that the disruptions in electricity specifically, resulted in parents deciding to opt out of care for fear of receiving sub-standard treatment. On

the whole, electricity supply in Nigeria is unstable, of poor quality, with frequent black outs and brown outs (Adenikinju, 2003). In Lagos, which is one of the states with the highest public water utilisation in the country, most hospitals obtain less than 15 to 17 per cent of their water needs from the state public water supply, and must instead drill tube wells or boreholes for supplies (Negbenebor, 2003).

Interventions creating changes to the functional organisation of such components of a hospital have been observed at a children's emergency facility in Malawi and this resulted in improvements in patient outcomes demographics (Robertson and Molyneux, 2001; Molyneux et al., 2006). The literature review also described how the implementation of similar changes in named facilities had significantly improved service quality and patient outcomes among children in developing countries (Biai et al., 2007, Robison et al., 2012).

The referral of children from the CHER was reported as "grey area" outcome, where children could either benefit from receiving a higher level of care involved specific services unavailable internally at the CHER or LUTH, or not afford or access recommended facilities such as advanced imaging or intensivist care. Although the fraction of children who had previously been designated for this form of transfer had not formed any notable proportion of the previous half-year reports, during the strike an additional indication for such referrals was the functional lack of bed-spaces for the volume of patients presenting for intake at the facility.

5.2.1.6 The Influence of the Extended Family Presence on the Outcome of DAMA

This study showed the extended family to be a powerful influence in parental decision making in the CHER. Family members could be a great advantage,

providing physical, emotional and financial support; however, in the event of hierarchical control being exerted, they also represented a source of a contrary view to retaining the child in care and as such contributed to delayed engagement with recommended treatments and advocated DAMA.

The extended family constitutes a common family structure within the African context, where the kinship ties encourage shared responsibilities regarding children and other members (Aldous, 1962, Desai, 1992, LeVine et al., 1996). The contributions by the extended family (uncles, aunts, cousins, even additional wives in polygamous homes) towards assisting both care seeking and engagement within hospital, have been widely documented in care-seeking in developing countries (Tipping and Segall, 1995, Oxaal et al., 1998).

The study identified specific domains in which these family members' contributions constitute the type of social support described in Chapter 2 as essential for adequate parenting capacity and a requirement for better odds of child survival (Belsky, 1984). The involvement of families during the hospitalisation of children has been described as assisting the parents by strengthening their coping mechanisms and providing support for their involvement in the care and treatments which have been outlined for the children (Sacchetti et al., 2000, Hopia et al., 2005, Mangurten et al., 2006). The absence of this support among low socioeconomic status parents compounded the barriers within care in this study, as these parents were unable to conduct advised practices at the CHER or even to procure food for themselves without their available units of (surrogate) family support.

This study demonstrated the importance of the decisions made among families, such as following the societal hierarchical authority represented in the cases

observed in the CHER by grandparents. Thus, the input of these individuals was crucial to children continuing in care. Household decision making in many developing societies is based on gender and/or generation, and most mothers are unable to take a sick child to a doctor without the express approval of their husband, husband's siblings or parent(s)-in-law (Desai and Johnson, 2005).

This study underlined the financial contributions made by these grandparents as an important part of their influence on care. This further speaks to the issues surrounding financial support for parents with children in PEC at the CHER, as discussed in the section on socioeconomic status.

5.2.2 Factors which Influenced the Desired Progression of Children towards Clinical-Administrative Outcomes

Although delays in progression were also experienced as a result of the factors in the previous section, these two factors demonstrable effects were only traceable within this study to delayed progression through the processes, to clinical-administrative outcomes.

5.2.2.1 Parents of Low Socioeconomic Status

The patterns in the developing country literature regarding socioeconomic status and PEC outcomes were explored in Chapter 2. These included evidence of parents with lower income, lower socioeconomic status, and a lack of education experiencing these features as barriers to timely care seeking decisions at home (Abantanga et al., 2009, Mabiala-Babela and Senga, 2009). These factors also resulted in difficulties both in initiating and in continuing prescribed PEC at a

designated facility following their formal engagement with prescribed PEC (Ozdogan et al., 2008, Hamid et al., 2005, Poudel et al., 2008).

The most common outcome linked to low socioeconomic status and the attending financial constraints in this study, was the limited engagement with the PEC process. Where this occurred prior to the CHER, additional home-based practice or attendance at intervening care facilities would occur, regardless of awareness of the need for definitive care at a facility such as the CHER. Where the impact of these factors occurred within the CHER, the termination of care was referred to as DAMA

From the empirical data, the features of socioeconomic status emerging as salient to level 1 of the delay model were:

a) The awareness of the existence of user fees at the destination facility
b) The lack of immediate financial and family/social support
c) Ignorance of appropriate actions following the acute onset of illness in the child

The level 3 delays involved how the financial constraints at each stage of treatment and investigation delayed more rapid continuation of the management process.

This study identified that among the Lagos population, not having the finances for user fees affected these parents' decisions to leave home and seek formal care. The popularity of an existing 'free healthcare' policy at the other public tertiary and secondary facilities in Lagos State was stated among both parents and health professionals as a key reason why they used Lagos-based public care. James et al. (2005) estimated that between 153,000 and 305,000 child deaths could be prevented annually in SSA by abolishing user fees. However, in a later study investigating the

impact of user fees, the authors specifically emphasised the importance of the need for careful consideration of the contextual relevance of the fees and their implementation, prior to organisational decisions about the status of such fees (James et al., 2006).

More recently, yet another systematic review showed that the concurrent improvement of service quality with the introduction of user fees could actually improve service utilisation (Lagarde and Palmer, 2008). The viewpoints of health professionals regarding user fees at the CHER were widely split and were based on past experiences of adjusted policies, both in support of and against user fees. However, the specific failing unanimously identified within all groups represented within this study was the timing of the demand for the fees as being mandatory at the CHER LUTH prior to care. This specific characteristic about the service fed directly into the public perception about the CHER LUTH, further compounding the level 1 delay in engagement in the PEC among the poorest families.

This current study supports the position of the James et al. (2006) review, by specifically identifying the advantages within the immediate context of the CHER gained by the use of user fees, namely the improved availability of consumables and pharmaceutical medications. However, it was clear that an appreciation of these advantages was limited within the studied population to health professional participants. Even then, only health professionals of the higher administrative cadres were able to state these advantages. This study has thus revealed the importance of a gap in the within-facility availability of such information. Furthermore, the ability of the management to demonstrate this as an advantage is doubtful.

The impact of having minimal family and social support among the poorest families attending the CHER confounded the initial ability to engage PEC, primarily through the lack of additional finances provided by such support. There was evidence that until church-based family support workers and family members were available the poorest families had been unable to engage with formal care seeking at care facilities. This supports Mabiela-Babela (2009) findings in which younger women had to wait for other caretakers to be physically present to endorse and financially support their care seeking at the target PEC facilities. The delay in that study was clearly observed among the younger, less educated mothers who were night- time attendees. This current study identified that the concurrent social and financial support served as an essential prop for these families and ensured that they were able to leave home and begin the process of PEC, which eventually led them to the CHER.

From the data collected from the identified lowest socioeconomic status parents at the CHER, the least educated had wholly depended on community advice and prescribing for the 'appropriate' management of their children's illness(es). Therefore, they were engaged in HBSM prior to being supported towards engaging with the formal PEC pathway. Neither of these parents was aware of orthodox treatments for the signs of illness displayed by their children, and as such depended wholly on their immediate community for guidance. Although this study does not support that educational level indicates the existence of an awareness of appropriate actions following the acute onset of illness in a child, there appeared to be an additional level of dependence on community prescribing by the lowest socioeconomic status mothers.

Inequitable access to health promotion has been found to follow a socioeconomic gradient, resulting in less effective programme coverage among rural-dwelling, poorer fractions of communities and populations. What this study underscores is the potential to use the attendance at PEC to reach low socioeconomic status individuals who otherwise have limited engagement with health services. Health professionals in the studied population agreed on the need for interventions for improving the financial and social independence of women in decision making and enhancing the primary thrust into engaging with care seeking pathways for PEC. Interventions of this type have been proven effective in the seminal women-oriented poverty eradication programme established in Kerala, India in 1998. This aims to encourage amongst other things, micro-financial initiatives and women's education (Devika and Thampi, 2007). In a similar way, in the immediate environment of the study there are on-going efforts to empower women financially. The Women and Poverty Alleviation Programme is based on ensuring improved education and an end to gender discrimination. By encouraging skills acquisition among the women in the state, this programme is aimed at tangible goals for reducing hunger and poverty indices by 2014 (Fapohunda, 2012). Therefore any planned interventions must take advantage of their attendance where identified, as they form an important proportion of the wider population needing, but potentially not attending, PEC in developing countries.

5.2.2.2 Placement of User Fees Pay-Points

This study uncovered the presence of a very important barrier to accessing PEC within the facility at the CHER. This involved the infrastructure present for taking the mandatory user fees, which was a demonstrable source of delayed access to

treatment for children identified across socioeconomic groups among parents. This barrier was also identified as important by health professionals.

The literature review explored the advantages following the implementation of organisational restructuring following the use of ETAT at PERs in SSA (see Chapter2; section 2.2.1.2 Addressing Paediatric Emergencies in Developing Countries – ETAT). The research showed that the improved organisation and placement of triage station services within the studied locations resulted in improved patient outcomes. This was because within the existing structure the progress of patients depends on the completion of registration and the timely procurement of consumables and pharmaceuticals. What this study emphasises is that administrative features, such as the placement of user fee payment points within such organisational schemes, are just as essential as clinical evaluation processes towards improvements to the organisation of the service delivered. Furthermore, as the timing of care is predicated on the completion of payment, this user-fee barrier represents an issue of singular importance for any implementation of a triage control exercise such as ETAT.

5.3 The Implications of this Research

The overall contribution of this study to the field of paediatric emergency care-based research in developing countries involves highlighting unique features of the factors involved in patient outcomes in this previously under-explored population, via a unique research approach, which employed a qualitative case study. The study was able to support the evidence of existing patterns of influence among the identified factors, while informing on detailed/specific characteristics of these factors; the methodological advantage of the single case study (Yin, 2009).

Unlike the pre-existing literature based in PERs in developing countries examining outcomes, this study engaged with the contemporary experiences in the CHER and was able to delve more deeply into the nature of communications between health professionals and parent/caregiver units. The components for concern highlighted here specifically include a lack of adequate information concerning treatments, the protocols, and existing barriers to care. These all formed vital communication needs of parents in this environment.

Another key contribution of this study was that it highlighted the relative deficiencies in parental understanding of the risks associated with drug safety in HBSM, in all but medically trained participants or those with direct professional experience of pharmaceuticals. This observation was unique to this population as it did not follow a discernible gradient for level of education. Furthermore, this emphasised a limitation within the design, whereby the collation of educational information for mothers was limited to the 18 mothers interviewed out of a possible 99 observed, and identifies a place for future research capturing a larger sample which measures for this variable in particular in order to more closely evaluate the impact of this factor.

Concerning the use of private practitioners, this study explained the better outcome indices reported/ascribed to private facilities (and transmitted among the population by word of mouth) as the basis of the selection of this option. This study identified that for this population, the private health professionals' practice of referring cases to the CHER late in the course of an illness meant that the children eventually experienced the eventual poorer outcome(s) at the CHER, with the attending implications to the institution's reputation.

The study contributed to the literature by offering a rare view of the progressive effects of an external strike action on an initially non-striking facility to care outcomes and the overall progression through care. This served to highlight existing systemic issues which compounded the available care and service delivery, and demonstrates how such critical events are important yet are under-reported within hospital-based PEC in developing countries.

Finally, the study contributed to the literature, by highlighting the interweaving role of the identified factors in the examined outcomes, in causing delayed progression through PEC during the pre-CHER and in-CHER segments of the experiences of children. These delays either were evident within the impact of these factors on outcomes such as death and DAMA (see section 5.2.1 Factors which Influenced the Risk of Undesirable Outcomes at the CHER), or emerged independent of these undesirable factors (section 5.2.2 Factors which Influenced the Desired Progression of Children towards Clinical-Administrative Outcomes). On comparison with wider patterns from literature, it can be seen that the presence of these factors and their traceable effects on outcomes, via delay, describes CHER at LUTH both as similar and yet unique to other PER in developing regions such as SSA. This further underscores the importance of appreciating the uniqueness of a setting within explorations of health service outcomes, and the benefit of taking a single case approach to examine the research question.

This study's examination of children and parents' experiences of the first 24 hours of care was significant because, as stated in Chapter 1:

i) It addressed the need for a methodology affording access to real-life chronology of care within the important first 24 hours of care at the CHER.

ii) It incorporated the collation of cross-sectional data describing patterns of outcomes for the stated period. From this, subsequent data collection can provide researchers with patterns from within a PEC facility, and information on key variables affecting them.

iii) It provided curative care based researchers with the opportunity to appreciate how multidimensional conceptual frameworks form an essential backdrop against which the experiences and outcomes in PEC can be examined. This is important because as recently as 2012, a study emerging from the CHER in Lagos was identified which revealed a methodology focussed on cross-sectional quantifications. In this the authors suggest that there remained a need for the appreciation of the multiple roles of social and environmental factors for better understanding the causation of the various clinico-administrative outcomes (Fajolu and Egri-Okwaji, 2011).

5.3.1 Implications for Local Practice

This study has identified three key implications for effecting change among the health professionals and immediate management of the CHER. These involve:

i) The need for training programme options for improved, culturally sensitive communication,

ii) The need for the improved promotion of solutions addressing the requirements of financial and socially indigent parents and their children attending the CHER.

iii) The need for an action plan for disruptions to patient intake and output.

The limitations within the existing communication processes between parents and health professionals highlighted the need for the effective provision of accessible

information regarding on-going treatments and local barriers to treatment logistics. It was shown that this needed to include, and also take into account, parents' own personally held beliefs in order to jointly achieve the desired progression for the well-being of the child. This study demonstrated how using this inclusive approach overcame the problematic barrier of cultural beliefs about treatments, thereby allowing a child to receive life-saving surgery.

There is evidence supporting using culturally appropriate communication techniques which are interactive within the context of each consultation (Barth and Lannen, 2011). The CHER health professionals present a potentially important source for determining the locally specific components of any planned communication interventions. They have also demonstrated an interest in using such interventions. There exists some scope therefore, for an institutional audit of performance at the CHER of health professionals to be expanded to incorporate evaluations of the professionals within these suggested training programmes.

Regarding the systemic promotion of positive information concerning the social services available at this facility, such as the Ibitoye Fawehinmi Fund for indigent patients, an advised need for discretion emerged from within the study in order to evaluate the value of the dissemination of such information. The question raised for internal consideration by the management of the CHER involves whether the promotion of this information should be limited to the health professionals or made more widely available to the populace. In spite of potential improvements to the facility's reputation, it must also be decided whether in order to provide a useful finance option offered at the clinicians' discretion, the management can afford to ignore ingrained concerns regarding the over-subscription of limited services and

resources (offered for free); the key argument voiced by professionals against abolishing user fees.

The CHER at LUTH has demonstrated a need for better organisation, not merely in the face of strikes but also of the existing service, as demonstrated in the placement of fee pay-points.

The facility could benefit from the use of some of the principles of the ETAT programme, which was described within the context of similar settings in Chapter 2. However, involving ETAT would require that management remain sensitive to the key issues facing implementation of such a programmes as outlined by Robertson and Molyneaux(2001) and later Gray and MacLennan(2008), such as understanding the basic staff mix, structure and training available. Such consideration would involve acknowledging the problems identified by this study surrounding the timing of the current infrastructure for demanding payments prior to treatment (see 4.3.5 Placement of User Fees' Pay points at the CHER). The rapid institution of a formal triage process at the facility in December 2010 was observed by the researcher to make the intake process smoother. In its acceptance of the change presented by the new Chief Consultant, the management of the CHER has shown itself to be responsive to identified limitations and amenable to changes in policy. The organogram presented in Chapter 1 shows the placement of the CHER within the LUTH as an institution with its own independent management. This enables many of the issues identified within this study to be fairly easily considered without external oversight from the federal Ministry of Health.

5.3.2 Implications for Relevant Policy

This study has identified six key implications for policy regarding the oversight of PEC services as currently delivered in Lagos State:

i) The implementation of a health promotion targeting the use of HBSM.

ii) The integration of private facility-based PEC into the upward referral process in Lagos State.

iii) The need for a further evaluation of the effectiveness of user fees among facilities in Lagos State.

iv) The implementation of an action plan for improved power and water supply for the CHER and Lagos State.

v) The implementation of improved dialogue with health professionals in order to prevent industrial action.

vi) The implementation of poverty alleviation and women's empowerment programmes for the population studied.

A key failing identified within this study involved the apparent non- integration of private emergency services for children into the upward referral system, which guides and is instituted as part of the publicly funded and administered PEC in Lagos State. This is in spite of the obvious popularity regarding the use of such facilities for acute cases of illness and their undeniable presence in the state. An evaluation of the National Health Policy does not involve the inclusion of such facilities, neither does the Lagos State Government's version of the policy as practised within the state.

As described above, the non-adherence to the upward referral pyramid observed during this study by private providers is common elsewhere in the developing world (Hensher et al., 2006). However, the potential value of such integration, especially

with regard to emergencies involving children, is supported by the evidence of harm emerging from the current state of disconnectedness. Solutions proffered within the study focus on training and establishing oversight for such facilities. Any such interactions demand the requisite establishment of effective working relationships at the level of policy governing PEC practice. In Lagos, this involves the Lagos State Ministry for Health, which has oversight for private practices within the state.

The study strongly hinted at population wide attitudes to HBSM, which in turn were traced within this study to the undesirable outcome of mortality. The importance of the community and long held social beliefs within the practice were established, as was the role of the factor in complicating the initial desire to seek care, eventually compounding the timing of earlier stimuli from the onset of illness. However, this was not the only factor involving socially determined responses as pre-existing cultural beliefs also represented similar pre-formed attitudes. However, HBSM in its timing along the PEC pathway preceded contact with the PER. It is within the PER that the advocated locally implemented changes to practice (improvements to communication) were shown as being able to engage parents/caregivers towards identifying similar attainable goals for their children alongside health professionals. Thus it is this timing of the behaviour and the attending point at which delay occurs which suggests the need for a community-targeted approach to promotion, which should be delivered at the state level, on the existing risks of HBSM.

This study also showed that even locally within the CHER, some promotion of the dangers of this practice have also has potential and could be considered within the identification and planning of communication training programmes addressing the specific problems for health professionals based therein.

The placement of user fees' pay-points produced functional barriers to continuation in care for the parents of children admitted to the CHER. With regards to the organisation of payment and the service delivery structure at the CHER, there is, as seen in Chapter 2, good evidence for restructuring in order to provide better patient outcomes (Biai et al., 2007, Robison et al., 2012). The management of the facility needs to be made aware of the degree to which the current organisational structure is a barrier to care. This study revealed areas of specific concern, such as the almost half-mile distance between CHER and the Adult A and E Department, where all payments have to be made after 4pm. The recent extension of working hours for the on-site pharmacy, as revealed during the fieldwork, demonstrates that the LUTH management are amenable to evidence-based suggestions of this sort.

The chronic nature of the infrastructural problems in the LUTH indicates deep-seated failings of both the wider context and the internal structure. From this study the problems have been seen to date further back to the 1990s; however, there is a need for the management to be aware of the impact of these problems. Not only are these functional barriers to quality healthcare, the information about these issues directly contributes to the poor patient perceptions of the facility and this forms both pre- and in-care barriers. As seen in the research by Nolan (2001) and English (2004a, 2004b), there is a desperate need in such facilities to identify through an audit, the portions of the facility which are most readily amenable to repair. The problems of electricity and water supply appear to have been perennial in the LUTH and Lagos State as a whole. This study finds, therefore, that identifying a sustainable means to accessing these core amenities should be the primary focus of the management at this time.

The issues of segregated industrial action appear to be emerging in the context of medical practice in Nigeria. Previous reports show that strikes have usually involved staff under the auspices of national groups, and the differential commitments demonstrated by the LUTH staff and Lagos State staff have not been encountered prior to the 2010-2011 Lagos State doctors strike. The impact of overcrowding and the boarding of children was observable on the services, staff and amenities, and resulted in the emergence of a pragmatic policy. For example, immediate referrals based on the non-availability of space, referrals to parallel levels of care, and referrals towards more 'established' private facilities for investigative tests. The impact of these disruptions on the children who remained in care was difficult to gauge directly due to the complexity of the issues, such as bed-space availability, overcrowding, limited expertise, parental discomfort, and the scarcity of equipment.

As the issues of industrial action continue to evolve in the Nigerian and Lagos based context, a facility such as the CHER must prepare itself for the continuing ethical debate regarding membership and duty. As seen from the newspapers of the period and the opinions of the staff at the site, the consensus on these issues in the context of the core issues of the strike at this time, delayed remuneration, remains unexamined. This certainly presents potential for future direct explorations of the individual and collective positions taken by health professionals in this context.

Finally, looking beyond local solutions for assisting poorer patients to afford care, there is, in principle, the NHIS to subsidise out-of-pocket expenditure on health. Considering there are only four million registered users of the NHIS among the 120 million inhabitants of the country (NATPOPCOMM, 2006), this suggests that only one in every 30 Nigerians is covered by this scheme. This also suggests that there is a need to expand the provision of NHIS coverage to incorporate the self-employed

and non-employed fractions of the population. At the population level, there currently exist poverty eradication programmes in place for women in Lagos State. As shown by Fapohunda (2012), these and any future broad based programmes of this type will require sustained state government assistance in order to ensure that they are maintained through to the target dates provided.

5.3.3 Implications for Dissemination of the Research

This study has identified as a key implication for advancing the ideas developed as part of this research, the fundamental issues concerning the dearth of published literature available regarding this topic within the population studied. Consequently, this study was tasked with:

a) Systematically reviewing studies based in PERs looking at factors associated with patient outcomes in developing countries.
b) Exploring the experiences of Lagos hospital-based populations of children and their families during PEC.
c) Exploring the experiences and opinions of the involved health professionals

This study's systematic review, as described in Chapter 2, formed the focus of this study and identified the gaps in the literature on PEC in developing countries. The absence of such a review published prior to this study has thus resulted in the material within Chapter 2 forming a principal section for publication within selected journals, and it is being specifically prepared for the African Journal of Emergency Medicine.

The results of the evaluation of health professionals' opinions collated within the focus groups in this study form the basis of many of the vital corroborating opinions for the parents of children receiving PEC at the CHER. From the review of the

literature during this study it was found that there was limited published work from this environment on how professionals felt about the potential causative factors of poor outcomes. Therefore, the evaluation of the focus group data examining the inter-group dynamics and balance of opinions form the basis of a second publication for submission to the African Journal of Emergency Medicine.

Finally, the experiences of parents within this study, revealed the importance of these evaluations in understanding the perspectives and motivations of the decision-making processes by parents. This previously under-explored perspective within the Lagos population thus forms the basis for a third planned publication, also considered suitable for the African Journal of Emergency Medicine.

Following the completion of this study, the Department of Paediatrics of the College of Medicine at the University has extended its proviso, as part of their involvement with the study, for requiring an audio-visual presentation to be made to the sitting members of the Faculty's Journal Club and Academic Meetings.

5.3.4 Implications for Future Research

This study has identified five key implications for research consequent from this study. These are as follows:

a. Taking advantage of the replication logic – provision of a comparable case

This case study afforded previously unreported levels of access to the patient and clinician populations at the CHER and was the basis for the depth of the descriptions which were available for exploration. Regarding future research based on this study, the limitations of the single-case design have been

explicated in Chapters 1 and 3. Therefore, a logical next step in advancing this research would be to duplicate the methodology within the population at a similar facility, specifically the tertiary CHER at LASUTH. This facility has some notable functional differences, for example no user fees, which would make such a comparison very helpful and potentially would yield additional factors of importance in the outcomes of PEC in Lagos State.

b. Examining the cultural basis of parental decisions

As stated above, there was a limited appreciation of the cultural basis for the decisions made, as many parents making decisions resulting in less favourable outcomes were subsequently unavailable for follow up interviews. The parental perceptions of practices such as home-medication were highlighted in this study, and identified by one mother as *"what they do"*. This would certainly benefit from further exploration across the population of the state. Research uncovering the salient social components of such acceptance in the multicultural setting of the state could prove to provide useful material for designers of health promotions towards limiting these practices. A focussed qualitative study investigating cultural attitudes as expressed within hospital-based care in Lagos designed for use within this population is planned within the next year.

By definition, the study's access to private hospital-based care was limited, and so much of the inner workings of these facilities were available only from the accounts of attending parents and previous experiences of health professionals. Consequently, applications for access to individual facilities are being prepared in an attempt to replicate this case study within facilities in the state.

c. Overcoming limitations to the study's scope of literature review

In this study only studies whose full texts were in English could be reviewed due to budget and time restrictions. The foreign language studies identified as eligible for consideration based on their titles and abstracts were not included in the study (a full record of these articles is available on request), and this could form a useful first step in updating the review of the literature from some of the underrepresented locations in Eastern Europe and South America.

d. Applying a lengthier immersion for data collection for acquiring a greater ethnographic input

When considering the breadth of the observations and interviews, the evaluation of the material showed that by the 15th interview, very little variation in some of the social and cultural variables was observed. In spite of the local logistical difficulties in obtaining new sessions for observation, the study attained both saturation and a practical end point, regarding the current research question. In order to achieve a wider ethnographic viewpoint of the complexly embedded cultural environments, future research could be scheduled over a longer period of time and follow greater defined time periods after admission to the CHER, months or even years. This would potentially involve a higher number of field workers for interviewing and observing.

e. Exploring existing baseline attitudes to explorative research using qualitative methods

Regarding the attitudes of individuals in the CHER towards recording equipment, this study observed that the restrictions placed by the ethics committee were based on perceptions of damage following recent 'media encounters'. Undoubtedly, this was related to a poor reputation coupled with a

reluctance to encourage openness to public scrutiny, and this resulted in a cycle of limited access to information (hospital) and suspicion (public). It would greatly benefit a future evaluation if the impact of these experiences could themselves, be examined through a series of interviews with patients, medical professionals, and administrative stakeholders at the LUTH. This would assist in determining how to address taking this environment through a necessary healing process regarding these unfortunate experiences.

f. Designing variables for larger sample comparative research designs

In addition to this, the descriptions afforded of these factors, presents novel way to consider their definition and conversion to variables for use in research designs focused on computing the statistical relationships within populations attending PER. For example, the value gained from this study of being aware of the effects of poor access to pay points, as discrete from parental financial status, even though both result in delayed payments for care, can help ensure a variable exploring the success of making payments during care is more clearly defined in settings similar to CHER. This study therefore forms a useful basis for defining future variables for logistic regression for determining the significance of factor/variable outcome relationships.

5.4 Limitations of the Study

Using a single site for the primary empirical work of this study meant that the findings regarding outcomes identified were limited from being considered directly representative of similar PERs (Gerring, 2007). However, a case study examining a phenomenon explained by existing frameworks can be said to be generalisable, as far as it illustrates the observed case's own manifestations of that theoretical framework (Yin, 2009). This is because in demonstrating the local interactions at the case site

more information becomes available in support of or against linkages (Gerring, 2007, Yin, 2009, Merriam, 1998). It is in this way that case studies advance the direction of research towards areas requiring confirmatory work.

This study set out to identify the factors involved in the outcomes of PEC but was not equipped to evaluate the interactions between these factors. In tracing potentially causal linkages through the PEC process, however, the study was able to highlight areas of potential causal interaction. Furthermore, in matching patterns to wider frameworks the relative importance of the identified factors could be ascribed. However, the design, without being able to determine the weight of the effect of confounding multiple variables in non-linear interactions, could only suggest the influence of the factors. This study therefore serves to highlight areas for further study on the nature of the interactions of the factors identified and described here.

A primary logistical limitation of the current study was the number of days of fieldwork eventually available for analysis. During the planning stages of the study, a minimum of 30 sessions (three sessions a week for ten continuous weeks) was considered a viable target for observing patients in their first day in care. This was to allow time for transcription and reflection, as well as weekly teleconferences with academic supervisors. The number of sessions eventually available for the observation sessions was reduced to 21 due to a four month-long industrial action among doctors working in over 90% of the available public health facilities. The resulting closure of the Lagos State-run facilities meant that all acutely unwell children were immediately referred to the single entry point of the CHER at LUTH. As the hospital's limited in-patient spaces filled up, the backlog created boarding and overcrowding in the CHER, and no new admissions were possible.

In spite of this, the collated data were able to provide internally confirmed evidence of the relevance of factors within the PEC pathways at the CHER. Within the concurrent data analysis and data collection, the point of saturation was suspected following the analysis of the 16th of the 18 interviews. Following this, it became difficult to acquire new ideas from the concurrent note taking and recoding process accompanying data collection. Saturation occurs when it is determined that new data may not significantly contribute to an enquiry (Strauss and Corbin, 2007). The personal judgement of the researcher remains a major point for the entry of bias in selecting the saturation point. This study's use of three datasets which were compared and matched against theoretical patterns, provided additional sources for challenging the sufficiency of the data on emerging patterns (Yin, 2009), and in this way the researcher was able to determine that no additional data was required.

One less obvious limitation was the absence of traditional member-checking in this study due to the sensitivity of the data. The only individual involved in reviewing the data at the setting was the CHER supervising consultant, whose input was invaluable for verifying the contextual importance of some of the issues raised by the participants of the focus groups. The academic supervisors for this study encouraged weekly telephone sessions and during these meetings, my reflections on the content and potential interpretations of the primary data were further discussed. These and scheduled submissions of unedited field notes meant the data analysed remained as close to the original notes as possible, and care was taken to limit any unfounded interpretations during all stages of the transcript development, coding and analysis.

To a great degree the study overcame the limitations in available data regarding patterns at the CHER, and those representing child survival factors Lagos State, by

examining the physically available records at the CHER and conducting the analyses of DHS data recorded in Appendix A respectively. Further access would have required access protocols to the data which proved beyond the remit of this study.

Finally, any errors in the context and composition of the thesis report are through the fault of the researcher being conversant in Nigerian language and nuances. For Nigerians, the 'journey towards the story' is a vital part of the story. However, in the traditions of qualitative research culture there exists a tension between précised reporting of fieldwork findings and telling the tales from the field in all their innate richness (Emerson et al., 1995).

At the end of the fieldwork, a respondent grabbed my hand and said *"please, please don't let this end here, please…"*. Thus the language of much of the thesis represents a personal interpretation of an important research experience through the eyes of a Nigerian researcher. This is an attempt to respond to that vocalisation of the depth of the need for an answer to the researched problem, as felt by all the nurses, doctors, mothers and children in the CHER in Lagos.

5.5 Final Summary and Reflections of the Researcher

This single site case study focused on answering the question: *What are the factors that influence the risk of mortality and other outcomes among children, within the first 24 hours after admission to a tertiary CHER in Lagos, Nigeria?*

By identifying eight factors from the triangulation of experiences, observations and interviews, their roles influencing specific outcomes could then be traced and illustrated using specific examples from the sampled population. This allowed an appreciation of the varied nature of the factors themselves, as well as their roles on

outcomes and engagement with PEC through effecting delays at different stages in the PEC pathway.

The study is thus able to add to the literature about PEC outcomes in developing countries' hospital-based PERs, by emphasising:

a) The importance of acknowledging pre-existing cultural beliefs and attitudes among parents and extended family.
b) The failures and under-utilised potential within in-CHER communication by health professionals and patients' families.
c) The risks to children from the disjunction between private practice engagement with the existing upward referral policy in the state and the need for the state to actively engage health promotion on the dangers of HBSM.
d) The need for the better promotion within CHER regarding solutions to support the PEC of indigent parents.
e) Finally, the issues surrounding the impact of strike actions on the non-involved facilities emerged. The knowledge of these issues is potentially of great value in this environment where such actions are becoming increasingly common.

This study began with a clear series of expectations based on years of a biomedical understanding of mortality. In other words, I expected straight-line answers, traceable factors, and for the case study to provide details able to specifically target the features of these factors for intervention. What emerged was a stronger understanding of the importance of the entire spectrum within which childhood illness and emergency care exist in developing world settings.

The study presented some constants and some deviations, which emphasised the importance of the individual in appreciating overall mortality on a case-by-case basis. More than ever, I have come away with an appreciation of the huge implications for the potential for using qualitative methodologies for evaluating PEC. Rather than seeing the experience as the arena for the clinical process, the case study carved out the micro-society within the CHER, and yet was still able to highlight the broader sociocultural issues as relevant to the primary focus of this research: the children attending the CHER.

This emphasis on experiences not only opened up the engrained perspectives of parents, but also to a large degree allowed the health professionals in this environment to become more visible than ever before. This study allowed a unique comparison of their perspectives with those of their patients' parents.

This case study based at the CHER in Lagos, represents the first ever qualitative evaluation of the PEC process and experiences in this facility, and from the state of the current published literature is poised to be the first study of this kind reporting on such a facility in Nigeria. The advantage of the novelty of the methodological considerations by reporting on both cross-sectional patterns and exploring multiple participant perspectives across key groups including both parents and staff, adds to the range of applications in policy and practice, and thus provides a useful template for future research in similar settings.

The immediate issue, which comes to mind about the fieldwork conducted for this study, was how the strike in other facilities resulted in a diminishing number of sessions for observation at the CHER. It became very difficult to visit the CHER in late December, see the same groups of children, and hear their parents being told:

"Sorry, we have no new admissions." However, it was precisely as a result of the strike that the information about the pre-existing infrastructural issues in the CHER became known.

Health professionals were eager to ensure that I was aware that the issues of infrastructure, such as power and water supply, were in fact longstanding and merely magnified by the strike. Indeed, a purely quantitative evaluation of admission patterns would have been hard-pressed to highlight this distinction in the awareness of key features of the CHER, which so strongly affected parental perceptions. The discovery of the role of these perceptions in the emergency care-seeking behaviour of Lagos dwellers also served as an important issue to be addressed in future policy.

The case study methodology proved to be a challenging, yet extremely insightful research and analysis tool. This is because it allowed the focus on smaller facets of wider complex risk factors, thereby highlighting their salient contribution to mortality risks as experienced by the individual child at the CHER.

REFERENCES

AALTIO, I. & HEILMANN, P. 2009. Case Study as a Methodological Approach. *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A., DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P. (eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications.

ABANTANGA, F. A., NIMAKO, B. & AMOAH, M. 2009. The range of abdominal surgical emergencies in children older than 1 year at the komfo anokye teaching hospital, kumasi, Ghana. *Annals of African Medicine,* 8 (4)**,** 236-242.

ABDURRAHMAN, M. 1983. Why our children die: a study of mortality pattern in an emergency paediatric unit in Kaduna, Nigeria. *Nigerian Medical Practitioner,* 5**,** 157-162.

ABRAHAM, C. & SHEERAN, P. 2005. The health belief model. *Predicting Health Behaviour: Research and Practice with Social Cognition Models***,** 28-80.

ADAMS, C. & VAN MANEN, M. 2008. Phenomenology. *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

ADEBAYO, S. B. & FAHRMEIR, L. 2005. Analysing child mortality in Nigeria with geoadditive discrete-time survival models. *Statistics in Medicine,* 24**,** 709-728.

ADEJUYIGBE, O., ADEROUNMU, A. O. & ADELUSOLA, K. A. 1992. Abdominal injuries in Nigerian children. *Journal of the Royal College of Surgeons of Edinburgh,* 37**,** 29-33.

ADENIKINJU, A. F. 2003. Electric infrastructure failures in Nigeria: a survey-based analysis of the costs and adjustment responses. *Energy policy,* 31**,** 1519-1530.

ADESUNKANMI, A. R. K., OGINNI, L., OYELAMI, A. & BADRU, O. 1998. Epidemiology of childhood injury. *The Journal of Trauma and Acute Care Surgery,* 44**,** 506-511.

AFOLABI, A. 2012. Self Medication, Drug Dependency and Self-Managed Health Care–A Review. *In:* (ED., P. J. M. (ed.) *Public Health – Social and Behavioral Health.* http://www.intechopen.com/books/public-health-social-and-behavioral-health/self-medication-drug-dependency-and-self-managed-health-care-a-review: Intechopen.

AHMAD, S., ELLIS, J. C., KAMWENDO, H. & MOLYNEUX, E. M. 2010. Impact of HIV infection and exposure on survival in critically ill children who attend

a paediatric emergency department in a resource-constrained setting. *Emergency Medicine Journal,* 27 (10)**,** 746-749.

AIKHIONBARE, H. A., YAKUBU, A. M. & NAIDA, A. M. 1989. Mortality pattern in the Emergency Paediatric Unit of Ahmadu Bello University Teaching Hospital, Zaria, Nigeria. *The Central African journal of medicine,* 35 (5)**,** 393-396.

ALAGAPPAN, K., SCHAFERMEYER, R., HOLLIMAN, C. J., ISERSON, K., SHERIDAN, I. A., KAPUR, G. B., THOMAS, T., SMITH, J. & BAYRAM, J. 2007. International emergency medicine and the role for academic emergency medicine. *Academic Emergency Medicine,* 14**,** 451-456.

ALDOUS, J. 1962. Urbanization, the extended family, and kinship ties in West Africa. *Social Forces,* 41**,** 6-12.

ALI, J., ADAM, R., BUTLER, A. K., CHANG, H., HOWARD, M., GONSALVES, D., PITT-MILLER, P., STEDMAN, M., WINN, J. & WILLIAMS, J. I. 1993. Trauma outcome improves following the advanced trauma life support program in a developing country. *The Journal of Trauma and Acute Care Surgery,* 34**,** 890-899.

ALUBO, O. 2001. The promise and limits of private medicine: health policy dilemmas in Nigeria. *Health Policy and Planning,* 16**,** 313-321.

ANDERSEN, R. M. 1995. Revisiting the Behavioral Model and Access to Medical Care: Does it Matter? *Journal of Health and Social Behavior,* 36**,** 1-10.

ANDERSON, P., PETRINO, R., HALPERN, P. & TINTINALLI, J. 2006. The globalization of emergency medicine and its importance for public health. *Bulletin of the World Health Organization,* 84**,** 835-839.

ANTHONY, D. R. 2011. Promoting emergency medical care systems in the developing world: Weighing the costs. *Global Public Health,* 6**,** 906-913.

ANTIA-OBONG, D. 1992. Paediatrics emergencies in Calabar. *Nigerian Medical Practitioner,* 23**,** 51-56.

ARGENT, A., KISSOON, N., DEVICTOR, D., MADDEN, M. A., SINGHI, S., VAN DER VOORT, E. & LATOUR, J. M. 2009. Response to: Twenty-three thousand unnecessary deaths every day: What are you doing about it? *Pediatric Critical Care Medicine,* 10**,** 610.

ARNOLD, J. L. 1999. International emergency medicine and the recent development of emergency medicine worldwide. *Annals of emergency medicine,* 33**,** 97-103.

ARNOLD, J. L. & HOLLIMAN, C. J. 2005. Lessons learned from international emergency medicine development. *Emergency medicine clinics of North America,* 23**,** 133-148.

ARREOLA-RISA, C., MOCK, C. N., LOJERO-WHEATLY, L., DE LA CRUZ, O., GARCIA, C., CANAVATI-AYUB, F. & JURKOVICH, G. J. 2000. Low-cost improvements in prehospital trauma care in a Latin American city. *The Journal of Trauma and Acute Care Surgery,* 48**,** 119.

ARROYO, P., LANGER, A. & AVILA, H. 1988. Modelo para el analisis de la sobrevivencia en la infancia; A model for the analysis of child survival. *Salud Publica Mex,* 30**,** 463-9.

ATRASH, H. K. 2011. Parent's death and its implications for child survival. *Journal of Human Growth and Development,* 21**,** 769-770.

AWODELE, O., AGBAJE, E., ABIOLA, O., AWODELE, D. & DOLAPO, D. 2012. Doctors' attitudes towards the use of herbal medicine in Lagos, Nigeria. *Journal of Herbal Medicine,* 2**,** 16-22.

AYOOLA, O., ORIMADEGUN, A., AKINSOLA, A. & OSINUSI, K. 2005. A five-year review of childhood mortality at the University College Hospital, Ibadan. *West African Journal of Medicine,* 24**,** 175-179.

AZIZI, B., ZULKIFLI, H. & KASIM, M. 1993. Risk factors for accidental poisoning in urban Malaysian children. *Annals of Tropical Paediatrics: International Child Health,* 13**,** 183-188.

BAKER, T. 2009a. Critical care in low-income countries. *Tropical Medicine & International Health,* 14**,** 143-148.

BAKER, T. 2009b. Pediatric emergency and critical care in low-income countries. *Paediatric Anaesthesia,* 19 (1)**,** 23-27.

BAMGBOYE, E. A. & FAMILUSI, J. B. 1990. Mortality pattern at a children's emergency ward, University College Hospital, Ibadan, Nigeria. *African Journal of Medicine & Medical Sciences,* 19**,** 127-32.

BARLOW, C. A. 2009. Interviews. *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A., DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P. (eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications.

BARTH, J. & LANNEN, P. 2011. Efficacy of communication skills training courses in oncology: a systematic review and meta-analysis. *Annals of oncology,* 22**,** 1030-1040.

BATE, R. 2008. *Making a killing: the deadly implications of the counterfeit drug trade,* AEI Press.

BAZELEY, P. 2004. Issues in mixing qualitative and quantitative approaches to research. *Applying qualitative methods to marketing management research***,** 141-156.

BELSKY, J. 1984. The determinants of parenting: A process model. *Child development***,** 83-96.

BENAQUISTO, L. 2008. Codes and Coding *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

BERG, J. M. 2008. Experiential Knowledge *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

BERNSTEIN, S. L., ARONSKY, D., DUSEJA, R., EPSTEIN, S., HANDEL, D., HWANG, U., MCCARTHY, M., JOHN MCCONNELL, K., PINES, J. M., RATHLEV, N., SCHAFERMEYER, R., ZWEMER, F., SCHULL, M., ASPLIN, B. R. & SOCIETY FOR ACADEMIC EMERGENCY MEDICINE, E. D. C. T. F. 2009. The Effect of Emergency Department Crowding on Clinically Oriented Outcomes. *Academic Emergency Medicine,* 16**,** 1-10.

BHAKOO, O., KHAJURIA, R., DESAI, A. & NARANG, A. 1989. Lessons from improved neonatal survival at Chandigarh. *Indian pediatrics,* 26**,** 234.

BHATTACHARYA, H. 2008. Interpretive Research. *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications

BHUTTA, Z. A., AHMED, T., BLACK, R. E., COUSENS, S., DEWEY, K., GIUGLIANI, E., HAIDER, B. A., KIRKWOOD, B., MORRIS, S. S. & SACHDEV, H. 2008. What works? Interventions for maternal and child undernutrition and survival. *The Lancet,* 371**,** 417-440.

BIAI, S., RODRIGUES, A., GOMES, M., RIBEIRO, I., SODEMANN, M., ALVES, F. & AABY, P. 2007. Reduced in-hospital mortality after improved management of children under 5 years admitted to hospital with malaria: randomised trial. *BMJ,* 335**,** 862.

BLACK, R. E., COUSENS, S., JOHNSON, H. L., LAWN, J. E., RUDAN, I., BASSANI, D. G., JHA, P., CAMPBELL, H., WALKER, C. F. & CIBULSKIS, R. 2010. Global, regional, and national causes of child mortality in 2008: a systematic analysis. *The Lancet,* 375**,** 1969-1987.

BOCK, G. L. 2012. Jehovah's Witnesses and autonomy: honouring the refusal of blood transfusions. *Journal of Medical Ethics,* 38**,** 652-656.

BOJALIL, R., GUISCAFRÉ, H., ESPINOSA, P., MARTÍNEZ, H., PALAFOX, M., GUILLERMINA, R. & GUTIÉRREZ, G. 1998. The Quality of Private and Public Primary Health Care Management of Children With Diarrhoea and Acute Respiratory Infections in Tlaxcala, Mexico. *Health Policy and Planning,* 13**,** 323-331.

BOOTH, A., PAPAIOANNOU, D. & SUTTON, A. 2011. *Systematic approaches to a successful literature review,* SAGE Publications Limited.

BRINKMANN, S. 2008. Interviewing *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

BROCKERHOFF, M. & HEWETT, P. 2000. Inequality of child mortality among ethnic groups in sub-Saharan Africa. *Bulletin of the World Health Organization,* 78**,** 30-41.

BRONFENBRENNER, U. 1979. *The ecology of human development: Experiments by nature and design,* Harvard Univ Pr.

BROOK, M., HILTY, D. M., LIU, W., HU, R. & FRYE, M. A. 2006. Discharge Against Medical Advice From Inpatient Psychiatric Treatment: A Literature Review. *Psychiatr Serv,* 57**,** 1192-1198.

BROWN, K. F., KROLL, J. S., HUDSON, M. J., RAMSAY, M., GREEN, J., LONG, S. J., VINCENT, C. A., FRASER, G. & SEVDALIS, N. 2010. Factors underlying parental decisions about combination childhood vaccinations including MMR: A systematic review. *Vaccine,* 28**,** 4235-4248.

BRUIJNS, S. R. & WALLIS, L. A. 2011a. Africa should be taking responsibility for emergency medicine in Africa. *African Journal of Emergency Medicine,* 1**,** 1-2.

BRUIJNS, S. R. & WALLIS, L. A. 2011b. Emergency medicine, an opportunity to re-imagine a speciality in Africa. *African Journal of Emergency Medicine,* 1**,** 49-50.

BRUNDAGE, M. D., FELDMAN-STEWART, D. & TISHELMAN, C. 2010. How do interventions designed to improve provider-patient communication work? Illustrative applications of a framework for communication. *Acta Oncologica,* 49**,** 136-143.

BUGAJE, M. A. & AIKHIONBARE, H. A. 2006. Paediatric HIV/AIDS seen at Ahmadu Bello University Teaching Hospital Zaria, Nigeria. *Annals of African Medicine,* 5 (2)**,** 73-77.

BULLARD, M. J., VILLA-ROEL, C., GUO, X., HOLROYD, B. R., INNES, G., SCHULL, M. J., VANDERMEER, B., OSPINA, M. & ROWE, B. H. 2012. The role of a rapid assessment zone/pod on reducing overcrowding in emergency departments: a systematic review. *Emergency Medicine Journal,* 29**,** 372-378.

CAHILL, P. & PAPAGEORGIOU, A. 2007. Triadic communication in the primary care paediatric consultation: a review of the literature. *The British Journal of General Practice,* 57**,** 904.

CASP. 2010a. *11 questions to help you make sense of a trial* [Online]. http://www.casp-uk.net/wp-content/uploads/2011/11/CASP_RCT_Appraisal_Checklist_14oct10.pdf: Oxford Public Health Resource Unit. [Accessed 21/12/2010 2010].

CASP. 2010b. *12 questions to help you make sense of a cohort study* [Online]. http://www.casp-uk.net/wp-content/uploads/2011/11/CASP_Cohort_Appraisal_Checklist_14oct10.pdf: Oxford Public Health Resource Unit. [Accessed 21/12/2010 2010].

CEVIKER, N., BAYKANER, K., KESKIL, S., CENGEL, M. & KAYMAZ, M. 1995. Moderate head injuries in children as compared to other age groups, including the cases who had talked and deteriorated. *Acta Neurochirurgica,* 133 (3-4)**,** 116-121.

CFECUSHS 2007. Emergency Care for Children: Growing Pains. *In:* SYSTEM, C. O. T. F. O. E. C. I. T. U. S. H. (ed.). accessed 26/09/2012 http://www.nap.edu/openbook.php?record_id=11655 The National Academies Press, New York, USA.

CHAN, P. & GOH, A. 1999. Respiratory syncytial virus infection in young Malaysian children. *Singapore medical journal,* 40 (5)**,** 336-340.

CHANDRAN, A., HYDER, A. A. & PEEK-ASA, C. 2010. The Global Burden of Unintentional Injuries and an Agenda for Progress. *Epidemiologic Reviews,* 32**,** 110-120.

CHAWLA, V. & HAUFTON, B. 1988. Pattern of childhood mortality at Harare central hospital, Zimbabwe. *East African medical journal,* 65**,** 238-245.

CHO, E., AKKAPEDDI, V. & RAJAGOPALAN, A. 2005. Developing emergency medicine through primary care. *The National medical journal of India,* 18**,** 154.

CHUDI, P. I. 2010. Healthcare problems in developing countries. *Medical Practice and Reviews,* 1**,** 9-11.

CITY_MAYORS. 2012. *The world's fastest growing cities and urban areas from 2006 to 2020* [Online]. CITY MAYORS STATISTICS. Available: http://www.citymayors.com/statistics/urban_growth1.html [Accessed 08/04/2011 2011].

CLELAND, J. G. & VAN GINNEKEN, J. K. 1988. Maternal education and child survival in developing countries: the search for pathways of influence. *Social Science & Medicine,* 27**,** 1357-1368.

COOPER, S. & ENDACOTT, R. 2007. Generic qualitative research: a design for qualitative research in emergency care? *Emergency Medicine Journal,* 24**,** 816-819.

COOPER, S., ENDACOTT, R. & CHAPMAN, Y. 2009. Qualitative research: specific designs for qualitative research in emergency care? *Emergency Medicine Journal,* 26**,** 773-776.

COOPER, S., PORTER, J. & ENDACOTT, R. 2011. Mixed methods research: a design for emergency care research? *Emergency Medicine Journal,* 28**,** 682-685.

CRESWELL, J. W. 2007. *Qualitative inquiry & research design: Choosing among five approaches,* 2455 Teller Road, Thousand Oaks, California, SAGE Publications, Inc.

CRESWELL, J. W. 2009. *Research design: Qualitative, quantitative, and mixed methods approaches*, Sage Publications, Inc.

CRESWELL, J. W. & CLARK, V. L. P. 2007. *Designing and conducting mixed methods research*, Sage Publications, Inc.

CUADROS, D. F., BRANSCUM, A. J. & CROWLEY, P. H. 2011. HIV–malaria co-infection: effects of malaria on the prevalence of HIV in East sub-Saharan Africa. *International journal of epidemiology,* 40**,** 931-939.

CUNNINGHAM, S. A., MITCHELL, K., VENKAT NARAYAN, K. & YUSUF, S. 2008. Doctors' strikes and mortality: A review. *Social Science & Medicine,* 67**,** 1784-1788.

DARLINGTON, Y., & SCOTT, D. 2002. Qualitative Research in Practice: Stories from the Field. Allen and Unwin.

DEEKS, J. J., DINNES, J., D'AMICO, R., SOWDEN, A., SAKAROVITCH, C., SONG, F., PETTICREW, M. & ALTMAN, D. 2003. Evaluating non-randomised intervention studies. *Health Technology Assessment,* 7**,** 1-179.

DEMICHELI, V., BARALE, A. & RIVETTI, A. 2005. Vaccines for women to prevent neonatal tetanus. *Cochrane Database of Systematic Reviews***,** http://mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD002959/pdf_fs.html.

DEMICHELI, V., JEFFERSON, T., RIVETTI, A. & PRICE, D. 2006. Vaccines for measles, mumps and rubella in children. *The Cochrane Library*.

DEMICHELI, V., RIVETTI, A., DEBALINI, M. G. & DI PIETRANTONJ, C. 2012. Vaccines for measles, mumps and rubella in children. *status and date: New search for studies and content updated (no change to conclusions), published in*.

DENZIN, N. & LINCOLN, Y. 2005. The Handbook of Qualitative Research 3ed.

DEROCHE, C. & DEROCHE, J. E. 2009. Obtaining Participant Consent *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A.,

DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P. (eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications

DESAI, S. 1992. Children at risk: the role of family structure in Latin America and West Africa. *The Population and Development Review***,** 689-717.

DESAI, S. & JOHNSON, K. 2005. Women's Decisionmaking and Child Health: Familial and social hierarchies. *A focus on gender: Collected papers on gender using DHS data***,** 55-68.

DEVIKA, J. & THAMPI, B. V. 2007. Between 'Empowerment'and 'Liberation'The Kudumbashree Initiative in Kerala. *Indian Journal of Gender Studies,* 14**,** 33-60.

DONMOYER, R. 2008. Paradigm. *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

DOYLE, C., LENNOX, L. & BELL, D. 2013. A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open,* 3.

DUARTE, M. C. M. B., AMORIM, M., X00E, NIA, R., CUEVAS, L. E., CABRAL-FILHO, J. & CORREIA, J. B. 2005. Risk factors for death from meningococcal infection in Recife, Brazil. *Journal of Tropical Pediatrics,* 51**,** 227-31.

DUKE, T. 2003. Transport of seriously ill children: a neglected global issue. *Intensive care medicine,* 29**,** 1414-1416.

EASTMAN, A. L., RINNERT, K. J., NEMETH, I. R., FOWLER, R. L. & MINEI, J. P. 2007. Alternate site surge capacity in times of public health disaster maintains trauma center and emergency department integrity: Hurricane Katrina. *The Journal of Trauma and Acute Care Surgery,* 63**,** 253-257.

EL-NAGGAR, A. E.-R., ABDALLA, M. S., EL-SEBAEY, A. S. & BADAWY, S. M. 2009. Clinical findings and cholinesterase levels in children of organophosphates and carbamates poisoning. *European Journal of Pediatrics,* 168**,** 951-6.

ELGER, T. 2009. Bounding the Case. *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A., DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P. (eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications.

ELUSIYAN, J. B. E., ADEJUYIGBE, E. A. & ADEODU, O. O. 2006. Hypoglycaemia in a Nigerian paediatric emergency ward. *Journal of Tropical Pediatrics,* 52 (2)**,** 96-102.

EMERSON, R. M., FRETZ, R. I. & SHAW, L. L. 1995. *Writing ethnographic fieldnotes*, University of Chicago Press.

ENGEL, G. L. 1977. The need for a new medical model: a challenge for biomedicine. *Science,* 196**,** 129.

ENGLISH, M., ESAMAI, F., WASUNNA, A., WERE, F., OGUTU, B., WAMAE, A., SNOW, R. & PESHU, N. 2004a. Assessment of inpatient paediatric care in first referral level hospitals in 13 districts in Kenya. *The Lancet,* 363**,** 1948-1953.

ENGLISH, M., ESAMAI, F., WASUNNA, A., WERE, F., OGUTU, B., WAMAE, A., SNOW, R. W. & PESHU, N. 2004b. Delivery of paediatric care at the first-referral level in Kenya. *The Lancet,* 364**,** 1622-1629.

ERNEST, S., ANUNOBI, N. & ADENIYI, A. 2004. Correlates of emergency response interval and mortality from anemia in childhood. *West African Journal of Medicine,* 21**,** 177-179.

FAJOLU, I. & EGRI-OKWAJI, M. 2011. Childhood mortality in children emergency centre of the Lagos University Teaching hospital. *Nigerian Journal of Paediatrics,* 38**,** 131-135.

FAPOHUNDA, T. 2012. Women and Poverty Alleviation in Lagos, Nigeria. *British Journal of Humanities and Social Sciences,* 3**,** 87.

FETTERMAN, D. M. 2009. *Ethnography: Step-by-step,* California, USA, SAGE Publications.

FLETCHER, M. & PLAKOYIANNAK, E. 2009. Sampling. *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A., DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P. (eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications.

FLICK, U. 2004. Constructivism. *In:* FLICK, U., VON KARDORFF, E. & STEINKE, I. (eds.) *A companion to qualitative research.* 55 City Road, London SAGE Publications Ltd.

FLICK, U., VON KARDORFF, E. & STEINKE, I. 2004. *A companion to qualitative research,* 55 City Road , London, SAGE Publications Ltd.

FMOH 2006. National Child Health Policy- revision 2006. *In:* LAMBO, E. (ed.). http://www.fmh.gov.ng/images/stories/documents/FMOH_CHP_Policy.pdf: Federal Ministry of Health, Abuja, Nigeria.

FOX, N. 2008. Induction. *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

GABE, J., OLUMIDE, G. & BURY, M. 2004. [] It takes three to tango':::: a framework for understanding patient partnership in paediatric clinics. *Social Science & Medicine,* 59**,** 1071-1079.

GAMATIE, Y., PRUAL, A., WOLLO, J. & HUGUET, D. 1994. Are pediatric wards in developing countries only places to die? A study of prior to hospitalization risk factors of death among 0-2 year old hospitalized children in Niamey, capital of Niger. *Journal of Tropical Pediatrics,* 40**,** 54.

GAVIDIA, R., FUENTES, S. L., VASQUEZ, R., BONILLA, M., ETHIER, M.-C., DIORIO, C., CANIZA, M., HOWARD, S. C. & SUNG, L. 2012. Low Socioeconomic Status Is Associated with Prolonged Times to Assessment and Treatment, Sepsis and Infectious Death in Pediatric Fever in El Salvador. *PLoS ONE,* 7**,** e43639.

GEORGE, A. L. & BENNETT, A. 2005. *Case studies and theory development in the social sciences*, The MIT Press.

GEORGE, I. & TABANSI, P. 2010. An audit of cases admitted in the children emergency ward in a Nigerian tertiary hospital. *Pak J Med Sci July-September,* 26**,** 740-743.

GERRING, J. 2007. *Case study research: principles and practices*, Cambridge University Press.

GILGUN, J. 2010. The Intellectual Roots of Grounded Theory. *Current Issues in qualitative Research,* 1.

GILGUN, J. F. Case-based research, analytic induction, and theory development: The future and the past. 2001.

GILLON, R. 2000. Refusal of potentially life-saving blood transfusions by Jehovah's Witnesses: should doctors explain that not all JWs think it's religiously required? *Journal of medical ethics,* 26**,** 299-301.

GOVE, S. 1997. Integrated management of childhood illness by outpatient health workers: technical basis and overview. The WHO Working Group on Guidelines for Integrated Management of the Sick Child. *Bulletin of the World Health Organization,* 75**,** 7.

GRAVES, P. & GELBAND, H. 2006. Vaccines for preventing malaria. *The Cochrane Library*.

GRAY, A. & MACLENNAN, C. 2008. What are the pre-requisites/pre-conditions for emergency triage and treatment (ETAT) to be beneficial? *International Child Health Review Collaboration*.

GRIFFIN, S. J., KINMONTH, A.-L., VELTMAN, M. W. M., GILLARD, S., GRANT, J. & STEWART, M. 2004. Effect on Health-Related Outcomes of

Interventions to Alter the Interaction Between Patients and Practitioners: A Systematic Review of Trials. *The Annals of Family Medicine,* 2**,** 595-608.

GUBA, E. G. & LINCOLN, Y. S. 1994. Competing paradigms in qualitative research. *Handbook of qualitative research,* 2**,** 163-194.

GYIMAH, S. O. 2006. Cultural background and infant survival in Ghana. *Ethnicity and health,* 11**,** 101-120.

HAK, T. & DUL, J. 2009. Pattern Matching *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A., DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P. (eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications.

HAMID, M. H., BUTT, T., BALOCH, G. R. & MAQBOOL, S. 2005. Acute poisoning in children. *Journal of the College of Physicians and Surgeons--Pakistan : JCPSP,* 15 (12)**,** 805-808.

HAMMERSLEY, M. & ATKINSON, P. 2007. *Ethnography: Principles in practice,* Taylor & Francis.

HAN, G.-S. 2002. The myth of medical pluralism: a critical realist perspective. *Sociological Research Online,* 6**,** U92-U112.

HARRINGTON, J., NOBLE, L. M. & NEWMAN, S. P. 2004. Improving patients' communication with doctors: a systematic review of intervention studies. *Patient education and counseling,* 52**,** 7-16.

HAUSMANN-MUELA, S., RIBERA, J. M. & NYAMONGO, I. 2003. Health-seeking behaviour and the health system response. *Disease Control Piroirities Project working paper No14*.

HAUSWALD, M. & YEOH, E. 1997. Designing a prehospital system for a developing country: estimated cost and benefits. *The American journal of emergency medicine,* 15**,** 600-603.

HAVERKORT, B., MILLAR, D. & GONESE, C. 2002. Knowledge and belief systems in Sub-Saharan Africa. *Ancient roots, new shoots. Endogenous Development in Practice. ETC/Compas, Leusden, pp137-152*.

HENNINK, M. M. 2007. *International focus group research: a handbook for the health and social sciences,* Cambridge Univ Pr.

HENSHER, M., PRICE, M. & ADOMAKOH, S. 2006. Referral hospitals. *Disease control priorities in developing countries,* 2**,** 229-244.

HERMANNS, H. 2004. Interviewing as an Activity. *In:* FLICK, U., VON KARDORFF, E. & STEINKE, I. (eds.) *A companion to qualitative research.* 55 City Road, London: SAGE Publications Ltd.

HEUVELINE, P. & GOLDMAN, N. 2000. A description of child illness and treatment behavior in Guatemala. *Social Science & Medicine,* 50**,** 345-364.

HICK, J. L., HANFLING, D., BURSTEIN, J. L., DEATLEY, C., BARBISCH, D., BOGDAN, G. M. & CANTRILL, S. 2004. Health care facility and community strategies for patient care surge capacity. *Annals of Emergency Medicine,* 44**,** 253-261.

HIGGINS, J. P. T., GREEN, S. & COLLABORATION, C. 2008. *Cochrane handbook for systematic reviews of interventions,* Wiley Online Library.

HIGHTOWER, R. 2010. Doing Ethnography In An Urban Hospital Emergency Department Setting: Understanding How Culture Was Related To Emergency Physician Habitus.

HIJMANS, E. & WESTER, F. 2009. Comparing the Case Study With Other Methodologies. *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A., DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P. (eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications.

HILL, Z., KENDALL, C., ARTHUR, P., KIRKWOOD, B. & ADJEI, E. 2003. Recognizing childhood illnesses and their traditional explanations: exploring options for care seeking interventions in the context of the IMCI strategy in rural Ghana. *Tropical Medicine & International Health,* 8**,** 668-676.

HITESH, J. 1996. Perceptions and constraints of pregnancy related referrals in rural Rajasthan. *Journal of Family Welfare,* 42**,** 24-29.

HOCHMAN, S. & KIM, K. 2009. The impact of HIV and malaria coinfection: what is known and suggested venues for further study. *Interdisciplinary perspectives on infectious diseases,* 2009.

HOOT, N. R. & ARONSKY, D. 2008. Systematic Review of Emergency Department Crowding: Causes, Effects, and Solutions. *Annals of emergency medicine,* 52**,** 126-136.e1.

HOPIA, H., TOMLINSON, P. S., PAAVILAINEN, E. & ÅSTEDT KURKI, P. 2005. Child in hospital: family experiences and expectations of how nurses can promote family health. *Journal of clinical nursing,* 14**,** 212-222.

HOUWELING, T. A. J. & KUNST, A. E. 2010. Socio-economic inequalities in childhood mortality in low-and middle-income countries: a review of the international evidence. *British medical bulletin,* 93**,** 7.

HOUWELING, T. A. J., KUNST, A. E., LOOMAN, C. W. N. & MACKENBACH, J. P. 2005. Determinants of under-5 mortality among the poor and the rich: a cross-national analysis of 43 developing countries. *International journal of epidemiology,* 34**,** 1257.

HWANG, U., MCCARTHY, M. L., ARONSKY, D., ASPLIN, B., CRANE, P. W., CRAVEN, C. K., EPSTEIN, S. K., FEE, C., HANDEL, D. A., PINES, J. M., RATHLEV, N. K., SCHAFERMEYER, R. W., ZWEMER, J. F. L. & BERNSTEIN, S. L. 2011. Measures of Crowding in the Emergency Department: A Systematic Review. *Academic Emergency Medicine,* 18**,** 527-538.

IBEZIAKO, S. & IBEKWE, R. 2004. Pattern and Outcome of Admissions in the Children's Emergency Room of the University of Nigeria Teaching Hospital, Enugu. *Nigerian Journal of Paediatrics,* 29**,** 103-108.

IDRO, R. & ALOYO, J. 2004. Manifestations, quality of emergency care and outcome of severe malaria in Mulago Hospital, Uganda. *African health sciences,* 4 (1)**,** 50-57.

ISHAK, A. A., AL-JAYEFY, N. H. & RAJA'A, Y. A. 2008. Profile of paediatric emergency cases in Yemen: The need for evidence-based guidelines. *Eastern Mediterranean Health Journal,* 14 (2)**,** 366-375.

ITINA, S. M. 1997. Characteristics of traditional birth attendants and their beliefs and practices in the Offot Clan, Nigeria. *Bulletin of the World Health Organization,* 75**,** 563-567.

JAGUN, S. 2011. Position Paper on Primary Health Care, Lagos State's Ministry of Health. *In:* CENTRE, S. A. E. R. A. (ed.). Lagos, Nigeria: Social and Economic Rights Action Centre SERAC.

JAIN, S. 2011. Concept of Self Medication: A Review. *International Journal of Pharmaceutical & Biological Archive,* 2.

JAMES, C., MORRIS, S. S., KEITH, R. & TAYLOR, A. 2005. Impact on child mortality of removing user fees: simulation model. *BMJ,* 331**,** 747-749.

JAMES, C. D., HANSON, K., MCPAKE, B., BALABANOVA, D., GWATKIN, D., HOPWOOD, I., KIRUNGA, C., KNIPPENBERG, R., MEESSEN, B. & MORRIS, S. S. 2006. To retain or remove user fees?: reflections on the current debate in low-and middle-income countries. *Applied health economics and health policy,* 5**,** 137-153.

JEFFERSON, T., SMITH, S., DEMICHELI, V., HARNDEN, A., RIVETTI, A. & DI PIETRANTONJ, C. 2005. Assessment of the efficacy and effectiveness of influenza vaccines in healthy children: systematic review. *The Lancet,* 365**,** 773-780.

JEGEDE, A. S. 2007. What led to the Nigerian boycott of the polio vaccination campaign? *PLoS Medicine,* 4**,** e73.

JOHN, E. U. 2013. The Impacts of User Fees on Health Services in Sub-Saharan African Countries: A Ctirical Analysis of the Evidence. *American Journal of Public Health Research,* 1**,** 196-202.

KALTER, H., BURNHAM, G., KOLSTAD, P., HOSSAIN, M., SCHILLINGER, J., KHAN, N., SAHA, S., DE WIT, V., KENYA-MUGISHA, N. & SCHWARTZ, B. 1997a. Evaluation of clinical signs to diagnose anaemia in Uganda and Bangladesh, in areas with and without malaria. *Bulletin of the World Health Organization,* 75**,** 103.

KALTER, H., SCHILLINGER, J., HOSSAIN, M., BURNHAM, G., SAHA, S., DE WIT, V., KHAN, N., SCHWARTZ, B. & BLACK, R. 1997b. Identifying sick children requiring referral to hospital in Bangladesh. *Bulletin of the World Health Organization,* 75**,** 65.

KANDALA, N. B., JI, C., STALLARD, N., STRANGES, S. & CAPPUCCIO, F. P. 2007. Spatial analysis of risk factors for childhood morbidity in Nigeria. *American Journal of Tropical Medicine and Hygiene,* 77**,** 770-778.

KASILO, O. M. J. & NHACHI, C. F. B. 1992. A pattern of acute poisoning in children in urban Zimbabwe: Ten years experience. *Human and Experimental Toxicology,* 11 (5)**,** 335-340.

KELLE, U. & ERZEBERGER, C. 2008. Qualitative and Quantitative Methods: Not in Opposition *In:* GIVEN, L. M. (ed.) *The Sage encyclopaedia of qualitative research methods.* California, USA: SAGE Publications.

KIESLER, D. J. & AUERBACH, S. M. 2006. Optimal matches of patient preferences for information, decision-making and interpersonal behavior: Evidence, models and interventions. *Patient Education and Counseling,* 61**,** 319-341.

KISSOON, N., CARCILLO, J. A., ESPINOSA, V., ARGENT, A., DEVICTOR, D., MADDEN, M., SINGHI, S., VAN DER VOORT, E. & LATOUR, J. 2011. World Federation of Pediatric Intensive Care and Critical Care Societies: Global Sepsis Initiative*. *Pediatric Critical Care Medicine,* 12**,** 494.

KISSOON, N. & GOLDMAN, R. D. 2007. Pediatric emergency medicine: a world of potential. *CJEM,* 9**,** 453.

KOBUSINGYE, O. C., HYDER, A. A., BISHAI, D., HICKS, E. R., MOCK, C. & JOSHIPURA, M. 2005. Emergency medical systems in low- and middle-income countries: recommendations for action. *Bulletin of the World Health Organization,* 83**,** 626-631.

KROEGER, A. 1983. Anthropological and socio-medical health care research in developing countries. *Social Science & Medicine,* 17**,** 147-161.

KRUEGER, R. A. & CASEY, M. A. 2009. *Focus groups: A practical guide for applied research*, California, USA, SAGE Publications.

KRUG, A., PATTINSON, R. C. & POWER, D. J. 2004. Why children die: An under-5 health care survey in Mafikeng region. *South African Medical Journal,* 94 (3 I)**,** 202-206.

LAGARDE, M. & PALMER, N. 2008. The impact of user fees on health service utilization in low-and middle-income countries: how strong is the evidence? *Bulletin of the World Health Organization,* 86**,** 839-848C.

LASGOV. 2011a. *HISTORY OF LAGOS STATE* [Online]. http://www.lagosstate.gov.ng/index.php?page=subpage&spid=14&mnu=null: © Copyright 2011, Lagos State Government, Nigeria. All rights reserved. 2011].

LASGOV 2011b. POPULATION. http://www.lagosstate.gov.ng/index.php?page=subpage&spid=12&mnu=null: © Copyright 2011, Lagos State Government, Nigeria. All rights reserved.

LAWN, J. E., COUSENS, S. & ZUPAN, J. 2005. 4 million neonatal deaths: When? Where? Why? *The Lancet,* 365**,** 891-900.

LERNER, E. B. & MOSCATI, R. M. 2001. The golden hour: scientific fact or medical "urban legend"? *Academic Emergency Medicine,* 8**,** 758-760.

LESI, F. E. A. 2010. *RE: Descriptions of Lagos University Teaching Hospital Childrens emergency room, management and Logistics.*

LESI, F. T., EO; EPELLE, TGS 2000. The changing pattern of childhood mortality in the children's emergency room of the Lagos University Teaching Hospital after 20 years. *Nigerian Medical Journal,* 38**,** 38-41.

LESLIE, C. 1980. Medical pluralism in world perspective [1]. *Social Science & Medicine. Part B: Medical Anthropology,* 14**,** 191-195.

LEVINE, R. A., LEVINE, S., DIXON, S., RICHMAN, A., LEIDERMAN, P. H., KEEFER, C. H. & BRAZELTON, T. B. 1996. *Child care and culture: Lessons from Africa*, Cambridge University Press.

LEWANDO HUNDT, G. 1988. *Health inequalities and the articulation of gender, ethnicity and class in the post partum health care of Negev Bedouin Arab mothers and their children.* University of Warwick.

LINCOLN, Y. S. & GUBA, E. G. 1985. Naturalist inquiry. *Beverly Hills (CA): Sage.*

LIU, F. & MAITLIS, S. 2009. Non-participant Observation. *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A., DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P.

(eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications.

LOCKYER, S. 2008. Observer bias *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

LSMOH. 2011. ***Lagos State Ministry of Health Activity Report (Y2) 2011*** [Online]. http://www.lsmoh.com/subfolder.php?folder_id=13: © Lagos State Ministry of Health, 2011. 2011].

LUDERS, C. 2004. Field Observation and Ethnography *In:* FLICK, U. (ed.) *The Companion to Qualitative Research.* 55 City road, London: Sage Publications Ltd.

LUDERS, C. 2008. Field Observation and Ethnography.

The Sage encyclopedia of qualitative research methods. California, USA: SAGE Publications

MABIALA-BABELA, J. R. & SENGA, P. 2009. Nighttime attendance at the Pediatric Emergency Room of the University Hospital Centre in Brazzaville, Congo. [French]. *Medecine tropicale : revue du Corps de sante colonial,* 69 (3)**,** 281-285.

MACK, N., WOODSONG, C. & DEVELOPMENT, E. U. A. F. I. 2005. *Qualitative Research Methods: A data collector's field guide,* FLI.

MACKIAN, S. 2003. A review of health seeking behaviour: problems and prospects. *Health Systems Development. University of Manchester, Manchester, UK*.

MAGREE, H. C., RUSSELL, F. M., SA'AGA, R., GREENWOOD, P., TIKODUADUA, L., PRYOR, J., WAQATAKIREWA, L., CARAPETIS, J. R. & MULHOLLAND, E. K. 2005. Chest X-ray-confirmed pneumonia in children in Fiji. *Bulletin of the World Health Organization,* 83 (6)**,** 427-433.

MAINOUS, A. G., DIAZ, V. A. & CARNEMOLLA, M. 2009. A community intervention to decrease antibiotics used for self-medication among Latino adults. *The Annals of Family Medicine,* 7**,** 520-526.

MAITLAND, K., BERKLEY, J. A., SHEBBE, M., PESHU, N., ENGLISH, M. & NEWTON, C. R. 2006. Children with severe malnutrition: can those at highest risk of death be identified with the WHO protocol? *PLoS medicine,* 3 (12)**,** e500.

MALDONADO, J. C., MELÉNDEZ, S. D. & FIGUERAS, A. 2007. Long-term effects of an educational intervention on self-medication and appropriate drug use in single-sex secondary public schools, Quito, Ecuador. *British journal of clinical pharmacology,* 63**,** 92-99.

MANGURTEN, J., SCOTT, S. H., GUZZETTA, C. E., CLARK, A. P., VINSON, L., SPERRY, J., HICKS, B. & VOELMECK, W. 2006. Effects of family presence during resuscitation and invasive procedures in a pediatric emergency department. *Journal of Emergency Nursing,* 32**,** 225-233.

MARECHAL, G. 2009. Constructivism. *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A., DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P. (eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications

MATHERS, C., FAT, D. M. & BOERMA, J. 2008. *The global burden of disease: 2004 update*, World Health Organization.

MAWERE, M. 2011. Are physicians' strikes ever morally justifiable? A call for a return to tradition. *Pan African Medical Journal,* 6.

MCKECHNIE, L. E. F. 2008. Observational Research *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

MEIER, D. E. & TARPLEY, J. L. 1998. Typhoid intestinal perforations in Nigerian children. *World Journal of Surgery,* 22 (3)**,** 319-323.

MENGE, I., ESAMAI, F., VAN REKEN, D. & ANABWANI, G. 1995. Paediatric morbidity and mortality at the Eldoret District Hospital, Kenya. *East African medical journal,* 72**,** 165.

MERRIAM, S. B. 1998. *Qualitative Research and Case Study Applications in Education. Revised and Expanded from" Case Study Research in Education."*, ERIC.

MILES, M. B. & HUBERMAN, A. M. 1994. Qualitative data analysis: An expanded sourcebook. 1994. *Beverly Hills: Sage Publications*.

MILLARD, A. 1994. A causal model of high rates of child mortality. *Social science & medicine (1982),* 38**,** 253.

MILLER, J. L. 2008. Biography. *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

MILLS, E., JADAD, A. R., ROSS, C. & WILSON, K. 2005. Systematic review of qualitative studies exploring parental beliefs and attitudes toward childhood vaccination identifies common barriers to vaccination. *Journal of Clinical Epidemiology,* 58**,** 1081-1088.

MINTEGI, S., SHAVIT, I. & BENITO, J. 2008. Pediatric Emergency Care in Europe. *Pediatric Emergency Care,* 24.

MKABELA, Q. 2005. Using the Afrocentric method in researching indigenous African culture. *The qualitative report,* 10**,** 178-189.

MOCK, C., ABANTANGA, F., GOOSEN, J., JOSHIPURA, M. & JUILLARD, C. 2009. Strengthening care of injured children globally. *Bulletin of the World Health Organization,* 87**,** 382-389.

MOCK, C. N., JURKOVICH, G. J., ARREOLA-RISA, C. & MAIER, R. V. 1998. Trauma mortality patterns in three nations at different economic levels: implications for global trauma system development. *The Journal of Trauma,* 44**,** 804.

MODERN_GHANA. 2010. Lagos Doctors Dare Fashola, Insist On Strike. *Modern Ghana* [Online].

MOGAJI, W. 2012. LUTH - A Haven Of Corruption And Mismanagement. *Sahara Reporters* [Online]. Available: http://mobile.saharareporters.com/article/luth-haven-corruption-and-mismanagement?page=2 accessed 05/06/12.

MOLINERO, M. R., HOLDEN, K. R., RODRIGUEZ, L. C., COLLINS, J. S., SAMRA, J. A. & SHINNAR, S. 2009. Pediatric convulsive status epilepticus in Honduras, Central America. *Epilepsia,* 50**,** 2314-9.

MOLYNEUX, E. 2001. Paediatric emergency care in developing countries. *The Lancet,* 357**,** 86-87.

MOLYNEUX, E. 2009. Emergency care for children in resource-constrained countries. *Transactions of the Royal Society of Tropical Medicine and Hygiene,* 103**,** 11-15.

MOLYNEUX, E. 15/02/2010 2010. *RE: RE: Paediatric emergency care in developing countries.* Type to C, S.

MOLYNEUX, E., AHMAD, S. & ROBERTSON, A. 2006. Improved triage and emergency care for children reduces inpatient mortality in a resource-constrained setting. *Bulletin of the World Health Organization,* 84**,** 314-9.

MOORE, P., WILKINSON, S. & RIVERA MERCADO, S. 2004. Communication skills training for health care professionals working with cancer patients, their families and/or carers. *Cochrane Database Syst Rev,* 2.

MORGAN, D. L. 1997. *Focus groups as qualitative research,* 2455 Teller Road, Thousand Oaks, California, Sage Publications, Inc.

MOSLEY, H. Will primary health care reduce infant and child mortality? A critique of some current strategies, with special reference to Africa and Asia. 1983. sn.

MOSLEY, W. & CHEN, L. 1984. An Analytical Framework for the Study of Child Survival in Developing Countries. *Population and Development Review,* 10**,** 25-45.

MULLIGAN, T. 2011. The development of emergency medicine systems in Africa. *African Journal of Emergency Medicine,* 1**,** 5-7.

NAIRALAND_POLITICS. 2012. Doctors' Strike In Lagos State: Chronicle Of Events. *Nairaland Politics* [Online]. Available: http://www.nairaland.com/933463/doctors-strike-lagos-state-chronicle accessed 01/09/12.

NARCI, A., SOLAK, O., TURHAN-HAKTANIR, N., AY, X00E, EK, A., DEMIR, Y., ELA, Y., X00FC, KSEL, OZKARACA, E. & TERZI, Y. 2009. The prognostic importance of trauma scoring systems in pediatric patients. *Pediatric Surgery International,* 25**,** 25-30.

NATPOPCOMM 2006. NATIONAL CENSUS REPORT 2006. *DATA FOR NATIONAL DEVELOPMENT*. http://www.population.gov.ng/index.php?option=com_content&view=article&id=118&Itemid=103 ed. ABUJA, NIGERIA: Copyright © 2011 National Population Commission.

NDHS 2008. Nigeria Demographic and Health Survey 2008. *In:* USAID, UNFPA & NIGERIA, N. (eds.) *National Population Commission (NPC) [Nigeria] and ICF Macro Report.* ICF Macro Calverton, Maryland, USA: http://www.measuredhs.com/pubs/pdf/FR222/FR222.pdf.

NEGBENEBOR, W. O. 2003. WATER RESOURCES IN NIGERIA: RIGHTS, ACCESSIBILITY, ALLOCATION AND MANAGEMENT. *WaterNepal WaterNepal***,** 349.

NOLAN, T., ANGOS, P., CUNHA, A., MUHE, L., QAZI, S., SIMOES, E., TAMBURLINI, G., WEBER, M. & PIERCE, N. 2001. Quality of hospital care for seriously ill children in less-developed countries. *The Lancet,* 357**,** 106-110.

NOOR, K. B. M. 2008. Case study: a strategic research methodology. *American Journal of Applied Sciences,* 5**,** 1602-1604.

NRC_CTS 1971. *Accidental death and disability: the neglected disease of modern society*, Washington DC, USA, National Academy of Sciences.

NWOGU, R., LARSON, J. S. & KIM, M. S. 2008. Reducing child mortality in Nigeria: A case study of immunization and systemic factors (vol 67, pg 161, 2008). *Social Science & Medicine,* 67**,** 1480-1480.

OBADARE, E. 2005. A crisis of trust: history, politics, religion and the polio controversy in Northern Nigeria. *Patterns of Prejudice,* 39**,** 265.

OBALUM, D. & FIBERESIMA, F. 2012. Nigerian National Health Insurance Scheme (NHIS): An overview. *The Nigerian postgraduate medical journal,* 19**,** 167.

OBINNA, C. 2012. NHIS: Steering access to quality healthcare in Nigeria. *VANGUARD NIGERIA* [Online]. Available: http://www.vanguardngr.com/2012/02/nhis-steering-access-to-quality-healthcare-in-nigeria/ accessed 01/09/12.

ODUSANYA, O. O. & BABAFEMI, J. O. 2004. Patterns of delays amongst pulmonary tuberculosis patients in Lagos, Nigeria. *BMC Public Health,* 4**,** 18.

OESTERGAARD, M. Z., INOUE, M., YOSHIDA, S., MAHANANI, W. R., GORE, F. M., COUSENS, S., LAWN, J. E., MATHERS, C. D., ON BEHALF OF THE UNITED NATIONS INTER-AGENCY GROUP FOR CHILD MORTALITY, E. & THE CHILD HEALTH EPIDEMIOLOGY REFERENCE, G. 2011. Neonatal Mortality Levels for 193 Countries in 2009 with Trends since 1990: A Systematic Analysis of Progress, Projections, and Priorities. *PLoS Med,* 8**,** e1001080.

OFFIONG, D. A. 1999. Traditional healers in the Nigerian health care delivery system and the debate over integrating traditional and scientific medicine. *Anthropological quarterly***,** 118-130.

OFOVWE, G. E., IBADIN, M. O., OKUNOLA, P. O. & OFOEGBU, B. 2005. Pattern of emergency neurologic morbidities in children. *Journal of the National Medical Association,* 97**,** 488-92.

OGDEN, R. 2008. Bias *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

OGUNBEKUN, I., OGUNBEKUN, A. & OROBATON, N. 1999. Private health care in Nigeria: walking the tightrope. *Health Policy and Planning,* 14**,** 174-181.

OGUNJUYIGBE, P. 2004. Under-Five Mortality in Nigeria: Perception and Attitudes of the Yorubas towards the Existence of "Abiku". *DEMOGRAPHIC RESEARCH,* 11**,** 43-56.

OJIKUTU, R. K. 2008. Pattern of Under-Five Deaths in Lagos State, Nigeria. *Sudanese Journal of Public Health,* 3**,** 176-185.

OKOJIE, G. 2011. Lagos Tightens Security, Issues Ultimatum On Abandoned Vehicles. *LEADERSHIP*, Fri, 11/11/2011 - 10:15am.

OKORO, N. 12/09/2010 2010. *RE: re: The CHER and attendance patterns.* Type to SOLEBO, D. C.

OLANIHUN. 2011. *RE: Discussing traditional names for Fevers and illnesses among Yoruba.*

OLASUNKANMI, A., C., O. & E., E. 2011. Lagos doctors resume strike. *VANGUARD NIGERIA* [Online].

Available: http://www.vanguardngr.com/2011/02/lagos-doctors-resume-strike/ accessed 12/01/2012.

OMRAN, A. 1971. The epidemiologic transition. *Milbank Memorial Fund Quarterly,* 49**,** 509-538.

OREAGBA, I., OSHIKOYA, K. & AMACHREE, M. 2011. Herbal medicine use among urban residents in Lagos, Nigeria. *BMC complementary and alternative medicine,* 11**,** 117.

OSHIKOYA, K., NJOKANMA, O., BELLO, J. & AYORINDE, E. 2007. Family self-medication for children in an urban area of Nigeria. *Paediatric and Perinatal Drug Therapy,* 8**,** 124-130.

OSHIKOYA, K. A., CHUKWURA, H., NJOKANMA, O. F., SENBANJO, I. O. & OJO, I. 2011. Incidence and cost estimate of treating pediatric adverse drug reactions in Lagos, Nigeria. *Sao Paulo Medical Journal,* 129**,** 153-164.

OSHINAIKE, B. 2/12/10 2010. *RE: Re: The CHER patterns of attendance and the organizational structure*

OXAAL, Z., COOK, S., UTVECKLING, S. S. F. I. & STUDIES, U. O. S. I. O. D. 1998. *Health and poverty gender analysis,* Institute of Development Studies at the University of Sussex.

OZDOGAN, H., DAVUTOGLU, M., BOSNAK, M., TUTANC, M. & HASPOLAT, K. 2008. Pediatric poisonings in southeast of Turkey: epidemiological and clinical aspects. *Human & Experimental Toxicology,* 27**,** 45-8.

PEDEN, M. 2008. *World report on child injury prevention,* Geneva, World Health Organization.

PERKINS, B., ZUCKER, J., OTIENO, J., JAFARI, H., PAXTON, L., REDD, S., NAHLEN, B., SCHWARTZ, B., OLOO, A. & OLANGO, C. 1997. Evaluation of an algorithm for integrated management of childhood illness in an area of Kenya with high malaria transmission. *Bulletin of the World Health Organization,* 75**,** 33.

PETTICREW, M. & ROBERTS, H. 2006. *Systematic Reviews in the Social Sciences: A Practical Guide,* Blackwell Pub.

PILLAY, B. J. 1993. *A Study of the Relation Between Health Attitudes, Values and Beliefs and Help-seeking Behaviour with Special Reference to a Representative Sample of Black Patients Attending a General Hospital,* University of Natal.

PONGSUPAP, Y. & LERBERGHE, W. V. 2006. Choosing between public and private or between hospital and primary care: responsiveness, patient-centredness and prescribing patterns in outpatient consultations in Bangkok. *Tropical Medicine & International Health,* 11**,** 81-89.

POUDEL, P., SINGH, R., RAJA, S. & BUDHATHOKI, S. 2008. Pediatric and neonatal tetanus: a hospital based study at eastern Nepal. *Nepal Medical College journal : NMCJ,* 10 (3)**,** 170-175.

POWELL-JACKSON, T., HANSON, K., WHITTY, C. J. M. & ANSAH, E. K. 2012. Who Benefits from Removing User Fees for Health Care? Evidence from a Randomised Experiment in Ghana (February 15, 2012). . [Accessed 12/01/13].

POWER, N. & FRANCK, L. 2008. Parent participation in the care of hospitalized children: a systematic review. *Journal of Advanced Nursing,* 62**,** 622-641.

RAGIN, C. C. 1992. " Casing" and the process of social inquiry1. *What is a case?: exploring the foundations of social inquiry***,** 217.

RAINER, T. H. 2000. Emergency medicine-the specialty. *Hong Kong Medical Journal,* 6**,** 269-275.

RAO, J., ANDERSON, L., INUI, T. & FRANKEL, R. 2007. Communication interventions make a difference in conversations between physicians and patients: a systematic review of the evidence. *Medical care,* 45**,** 340.

RASSEKH, B., SEGAREN, N., PETERS, D., EL-SAHARTY, S., SIADAT, B., JANOVSKY, K. & VUJICIC, M. 2009. Review of community empowerment strategies for health. *Improving health service delivery in developing countries: from evidence to action***,** 127-171.

RAZZAK, J. A. & KELLERMANN, A. L. 2002. Emergency medical care in developing countries: is it worthwhile? *Bulletin of the World Health Organization,* 80**,** 900-905.

REVIEWS, C. F. & DISSEMINATION 2009. *CRD's guidance for undertaking reviews in healthcare,* York Publ. Services.

RINGSTED, F., BYGBJERG, I. & SAMUELSEN, H. 2006. Early home-based recognition of anaemia via general danger signs, in young children, in a malaria endemic community in north-east Tanzania. *Malaria journal,* 5**,** 111.

ROBERTSON, M. A. & MOLYNEUX, E. M. 2001. Description of cause of serious illness and outcome in patients identified using ETAT guidelines in urban Malawi. *Archives of Disease in Childhood,* 85 (3)**,** 214-217.

ROBISON, J. A., AHMAD, Z. P., NOSEK, C. A., DURAND, C., NAMATHANGA, A., MILAZI, R., THOMAS, A., SOPRANO, J. V., MWANSAMBO, C. & KAZEMBE, P. N. 2012. Decreased Pediatric Hospital Mortality After an Intervention to Improve Emergency Care in Lilongwe, Malawi. *Pediatrics,* 130**,** e676-e682.

ROUDSARI, B., SHADMAN, M. & GHODSI, M. 2006. Childhood trauma fatality and resource allocation in injury control programs in a developing country. *Bmc Public Health,* 6**,** 117.

ROWE, B. H., GUO, X., VILLA-ROEL, C., SCHULL, M., HOLROYD, B., BULLARD, M., VANDERMEER, B., OSPINA, M. & INNES, G. 2011. The Role of Triage Liaison Physicians on Mitigating Overcrowding in Emergency Departments: A Systematic Review. *Academic Emergency Medicine,* 18**,** 111-120.

RUBINSON, L., HICK, J. L., CURTIS, J. R., BRANSON, R. D., BURNS, S., CHRISTIAN, M. D., DEVEREAUX, A. V., DICHTER, J. R., TALMOR, D. & ERSTAD, B. 2008. Definitive Care for the Critically Ill During a Disaster: Medical Resources for Surge CapacityFrom a Task Force for Mass Critical Care Summit Meeting, January 26–27, 2007, Chicago, IL. *CHEST Journal,* 133**,** 32S-50S.

RYAN, R., SANTESSO, N., HILL, S., LOWE, D., KAUFMAN, C. & GRIMSHAW, J. 2011. Consumer-oriented interventions for evidence-based prescribing and medicines use: an overview of systematic reviews. *Cochrane Database Syst Rev,* 5.

SACCHETTI, A., CARRACCIO, C., LEVA, E., HARRIS, R. H. & LICHTENSTEIN, R. 2000. Acceptance of family member presence during pediatric resuscitations in the emergency department: effects of personal experience. *Pediatric Emergency Care,* 16**,** 85.

SAFRAN, D. G., TAIRA, D. A., ROGERS, W. H., KOSINSKI, M., WARE JR, J. E. & TARLOV, A. R. 1998. Linking primary care performance to outcomes of care. *The Journal of family practice,* 47.

SANDELOWSKI, M. 2008. Member Check *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

SANDERSON, S., TATT, I. D. & HIGGINS, J. P. T. 2007. Tools for assessing quality and susceptibility to bias in observational studies in epidemiology: a systematic review and annotated bibliography. *International Journal of Epidemiology,* 36**,** 666-676.

SANTOS, D. B., BARRETO, M. L. & COELHO, H. L. L. 2009. Drug use and associated factors in children living in poor areas. *Revista de Saúde Pública,* 43**,** 768-778.

SCHELL, C. O., REILLY, M., ROSLING, H., PETERSON, S. & MIA EKSTRÖM, A. 2007. Socioeconomic determinants of infant mortality: A worldwide study of 152 low-, middle-, and high-income countries. *Scandinavian Journal of Public Health,* 35**,** 288-297.

SCHELLENBERG, J. A., VICTORA, C. G., MUSHI, A., DE SAVIGNY, D., SCHELLENBERG, D., MSHINDA, H. & BRYCE, J. 2003. Inequities among the very poor: health care for children in rural southern Tanzania. *The Lancet,* 361**,** 561-566.

SCHEPER-HUGHES, N. 1987. *Child survival: Anthropological perspectives on the treatment and maltreatment of children,* Springer.

SCHUMACHER, R., SWEDBERG, E., DIALLO, M., KEITA, D. & KALTER, H. 2002. Mortality study in Guinea. Investigating the causes of death in children under 5.

SCIE. 2006. *The conduct of systematic research reviews for SCIE knowledge reviews* [Online]. Social Care Institute for Excellence. Available: http://www.scie.org.uk/publications/researchresources/rr01.pdf.

SHARKEY, A. B. 2009. *The Health and Social Context of Infant Death: Reflections from South Africa,* ProQuest.

SHARMA, B. 2009. Post-Positivism. *In:* MILLS, A. J., DUREPOS, G., WIEBE, E., BOJE, D. M., CARR, A., DAVID, M., DAVIES, A., DOOREWAARD, H., EISENHARDT, K. & GEPHART, R. P. (eds.) *The Sage Encyclopedia of Case Study Research.* California, USA: SAGE Publications

SHEFER, A., BRISS, P., RODEWALD, L., BERNIER, R., STRIKAS, R., YUSUF, H., NDIAYE, S., WILIAMS, S., PAPPAIOANOU, M. & HINMAN, A. R. 1999. Improving Immunization Coverage Rates: An Evidence-based Review of the Literature. *Epidemiologic Reviews,* 21**,** 96-142.

SIBLEY, L. M., SIPE, T. A., BROWN, C. M., DIALLO, M. M., MCNATT, K. & HABARTA, N. 2007. Traditional birth attendant training for improving health behaviours and pregnancy outcomes. *Cochrane Database of Systematic Reviews***,** http://mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD005460/pdf_fs.html.

SIBLEY, L. M., SIPE, T. A. & KOBLINSKY, M. 2004. Does traditional birth attendant training increase use of antenatal care? A review of the evidence. *Journal of Midwifery & Womens Health,* 49**,** 298-305.

SIDDIQUI, E. U., RAZZAK, J. A., NAZ, F. & KHAN, S. J. 2008. Factors associated with hydrocarbon ingestion in children. *JPMA - Journal of the Pakistan Medical Association,* 58**,** 608-12.

SIEBER, J. E. & STANLEY, B. 1988. Ethical and professional dimensions of socially sensitive research. *American Psychologist,* 43**,** 49.

SINCLAIR, D. 2005. Subspecialization in emergency medicine: Where do we go from here? *CJEM,* 7**,** 344.

SINGHI, S., JAIN, V. & GUPTA, G. 2003. Pediatric emergencies at a tertiary care hospital in India. *Journal of Tropical Pediatrics,* 49 (4)**,** 207-211.

SMITH, G. S. & BARSS, P. 1991. Unintentional injuries in developing countries: the epidemiology of a neglected problem. *Epidemiologic Reviews,* 13**,** 228.

SOARES-WEISER, K., GOLDBERG, E., TAMIMI, G., PITAN, O. & LEIBOVICI, L. 2004. Rotavirus vaccine for preventing diarrhoea. *Cochrane Database Syst Rev,* 1.

STACEY, M. 1988. *The sociology of health and healing: a textbook,* Routledge.

STAKE, R. E. 1995. *The art of case study research,* California, USA, Sage Publications, Inc.

STEWART, M., BROWN, J., BOON, H., GALAJDA, J., MEREDITH, L. & SANGSTER, M. 1999. Evidence on patient-doctor communication. *Cancer prevention & control: CPC= Prevention & controle en cancerologie: PCC,* 3**,** 25.

STEWART, M. A. 1995. Effective physician-patient communication and health outcomes: a review. *CMAJ: Canadian Medical Association Journal,* 152**,** 1423.

STRAUSS, A. & CORBIN, J. 2007. *Basics of qualitative research: Techniques and procedures for developing grounded theory,* Thousand Oaks, California, Sage Publications.

STREET , R. L., MAKOUL, G., ARORA, N. K. & EPSTEIN, R. M. 2009. How does communication heal? Pathways linking clinician–patient communication to health outcomes. *Patient education and counseling,* 74**,** 295-301.

TAMBURLINI, G., DI MARIO, S., MAGGI, R. S., VILARIM, J. N. & GOVE, S. 1999. Evaluation of guidelines for emergency triage assessment and treatment in developing countries. *Archives of Disease in Childhood,* 81 (6)**,** 478-482.

TATES, K. & MEEUWESEN, L. 2001. Doctor-parent-child communication. A (re) view of the literature. *Social Science & Medicine,* 52**,** 839-851.

THADDEUS, S. & MAINE, D. 1994. Too far to walk: maternal mortality in context. *Social science & medicine,* 38**,** 1091-1110.

TIMM, N. L., HO, M. L. & LURIA, J. W. 2008. Pediatric emergency department overcrowding and impact on patient flow outcomes. *Academic Emergency Medicine,* 15**,** 832-837.

TIPPING, G. & SEGALL, M. 1995. *Health care seeking behaviour in developing countries. An annotated bibliography and literature review*.

UN-HABITAT 2007. UNITED NATIONS HABITAT REPORT STATE OF THE WORLD'S CITIES 2007. *In:* CENTRE, U. H. S. (ed.). NAIROBI, KENYA: http://www.unhabitat.org/documents/media_centre/sowcr2006/SOWCR%202.pdf.

UNICEF. 2012. *State of the World's Children 2012- Children in an Urban World* [Online]. New York: UNICEF. Available: www.unicef.org/sowc2012 [Accessed 05/05/12 2012].

VAN DE POEL, E., O'DONNELL, O. & VAN DOORSLAER, E. 2007. Are urban children really healthier? Evidence from 47 developing countries. *Social Science & Medicine,* 65**,** 1986-2003.

VAN NORREN, B., VAN VIANEN, H. & ONDERZOEK, P. D. 1986. *The malnutrition-infections syndrome and its demographic outcome in developing countries*, Ministerie van Onderwijs en Wetenschappen.

VANDEBOSCH, H. 2008. Captive Population. *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

VEIRUM, J., BIAI, S., JAKOBSEN, M., SANDSTROM, A., HEDEGAARD, K., KOFOED, P., AABY, P. & SODEMANN, M. 2007. Persisting high hospital and community childhood mortality in an urban setting in Guinea-Bissau. *Acta Paediatrica,* 96**,** 1526-1530.

VICK, S. & SCOTT, A. 1998. Agency in health care. Examining patients' preferences for attributes of the doctor–patient relationship. *Journal of Health Economics,* 17**,** 587-605.

VICTORA, C. G., WAGSTAFF, A., SCHELLENBERG, J. A., GWATKIN, D., CLAESON, M. & HABICHT, J. P. 2003. Applying an equity lens to child health and mortality: more of the same is not enough. *Lancet,* 362**,** 233-241.

WAMMANDA, R. & ALI, F. 2004. Conditions Associated with the Risk of Death Within 24 Hours of Admission in Children in Zaria, Nigeria. *Annals of African Medicine,* 3**,** 134-137.

WASEEM, H., NASEER, R. & RAZZAK, J. A. 2011. Establishing a successful pre-hospital emergency service in a developing country: experience from Rescue 1122 service in Pakistan. *Emergency Medicine Journal,* 28**,** 513-515.

WEBER, M., MULHOLLAND, E., JAFFAR, S., TROEDSSON, H., GOVE, S. & GREENWOOD, B. 1997. Evaluation of an algorithm for the integrated management of childhood illness in an area with seasonal malaria in the Gambia. *Bulletin of the World Health Organization,* 75**,** 25.

WHO 1986. World Health Organisation: Ottawa charter for health promotion. *Journal of Health Promotion,* 1**,** 1-4.

WHO 2000. *General guidelines for methodologies on research and evaluation of traditional medicine,* Geneva, Switzerland, World Health Organization.

WHO 2006. World Health Organization. Mortality Country Fact Sheet 2006-Nigeria. http://www.who.int/whosis/mort/profiles/mort_afro_nga_nigeria.pdf : accessed 1/07/2008.

WHO/UNICEF. 1978. *Declaration of Alma Ata* [Online]. World Health Organization.
Available: http://www.searo.who.int/LinkFiles/Health_Systems_declaration_almaata.pdf [Accessed 02-01-2010 2010].

WILKINSON, S. 1998. Focus groups in health research. *Journal of Health Psychology,* 3**,** 329-348.

WILLIAMS, J. P. 2008. Non-Participant Observation *In:* GIVEN, L. M. (ed.) *The Sage encyclopedia of qualitative research methods.* California, USA: SAGE Publications.

WOLF, D. 1991. High-risk methodology: Reflections on leaving an outlaw society. *Experiencing fieldwork: An inside view of qualitative research***,** 211-23.

WORLD_BANK 1995. *Minimum package of health services: criteria, method and data,* Washington DC, World Bank Publications.

WORLD_BANK. 2010. *Data and Statistics- Country Classification* [Online]. Available: http://go.worldbank.org/K2CKM78CC0 [Accessed 27th Janurary 2010 2010].

WORLD_BANK. 2012. *Mortality Rate under 5 (Nigeria)* [Online]. World Bank, public data Access. Available: http://www.google.com/publicdata?ds=wb-wdi&met=sh_dyn_mort&idim=country:NGA&tstart=-315619200000&tunit=Y&tlen=47 [Accessed 25/09/2012 2010].

YAHYA, M. 2007. Polio vaccines - "No thank you"! Barriers to polio eradication in northern Nigeria. *African Affairs,* 106**,** 185-204.

YILMAZ, H. L. & YILDIZDAS, D. R. 2003. Amitraz poisoning, an emerging problem: Epidemiology, clinical features, management, and preventive strategies. *Archives of Disease in Childhood,* 88 (2)**,** 130-134.

YIN, R. K. 2009. *Case study research: Design and methods,* Thousand Oaks, California, USA, Sage publications.

APPENDIX A

Secondary analysis of the Demographic and Health Survey 2008: examining risk factors of under-5 mortality in Lagos Nigeria

Introduction

There exist large sample survey datasets for Nigeria, which contain variables representative of health and mortality indicators, which are most frequently used at the National level, for policy planning (Rutstein et al., 2004). This study took advantage of just such a dataset, performing a secondary analysis of a recent population-based survey dataset. This dataset's format allowed a representative subset for each state of the country to be isolated and analysed. Thus, the subsample for Lagos children; their demographics and health related indicators, was isolated and analysed.

This analysis served to ground the case study in an appreciation of the significance of the salient risk factors for children within the wider context of Lagos as a whole. By evaluating the patterns and associations among the risk factor variables, this chapter also identified those of potential value towards appreciating the mortality risks in the primary empirical work. It also provided a contextual basis for the interpretation of the findings of the study as a whole.

This appendicular chapter describes in the first section, how secondary analysis are useful in principle, and goes on to outline the objectives for these analysis within this study. A description of the methods used for the analysis, and the results of the

process follows, exploring the relationships between mortality and the health indicators. The chapter concludes by discussing the how the findings from Lagos are relevant compared with the established relationships supported by existing literature. The final section reflects on the relevance of these findings to the design and conduct of this study.

Background

Secondary analysis refers to the analysis of existing data by a researcher for a different purpose to which the data were originally collected (Boslaugh, 2007). Usually, survey datasets lend themselves well to the production of secondary analytic descriptive reports, showing patterns of the distribution of specific variables within the whole (or parts of a) study population (Kiecolt and Nathan, 1990). This allows researchers to quantify variables of interest and potentially produce new interpretations, from these data (Bierman and Bubolz, 2011).

Methods

The aim was to conduct secondary analysis on a population survey dataset representative of Lagos State, Nigeria. The objectives of this analysis were as follows:

1. Identify and gain access to a current and representative child mortality data of the Lagos and Nigerian populations
2. Select relevant variables for analysis
3. Perform relevant logistic regression analysis to determine the variables significantly and independently associated with mortality risk in the Lagos population.

4. Describe and interpret the findings from the analysis with reference to wider literature about these variables.

5. Reflect on the potential importance of these variables within mortality in the context of this study.

Identify and gain access to a current and representative child mortality data of the Lagos and Nigerian populations

Two potential databases were identified at the start of this research. They included: the United States Agency for International Development (USAID) Demographic Health Surveillance surveys, and The United Nations' Multiple Indicators Cluster Surveys (MICS).

The DHS project, established in the 1984 was designed to allow the USAID to access pertinent data concerning the performance of their regional health policies in developing countries (Rutstein, 2005). Since then, DHS data has been increasingly used in health-based epidemiological research from the developing world, particularly Sub-Saharan Africa (Adebayo and Fahrmeir, 2005) (Kandala et al., 2007; Berger et al., 2002; Desai and Alva, 1998).

UNICEF MICS was principally designed to support the monitoring of global progress towards the goals defined at the 1990 World Summit for Children. (United_Nations, 2012).However, the surveys have been used in similar ways as DHS by independent researchers, and even in combination with DHS where required (Gordon et al., 2003).

In general, these surveys are comparable, with the few existing differences being due to definitional requirements placed on individual variables, by survey designers

(ibid.).Where surveys for the same period are available, it has been common practice to either select the more recent or combine both datasets.

For the purposes of this study, the more current version of these surveys for Nigeria, at the time this research was being designed, was the Nigerian version of the DHS for 2008. (The most recent available MICS was the version for 2003).

The NDHS 2008 updated the estimates of health indicators from earlier NDHS: 1990, 1999 and 2003. The source data included a nationally representative sample of 48,871 (33,385 women age 15-49 years and 15,486 men age 15-59 years). The respondents were gathered from a sub-sample of the households from every state of Nigeria. The NDHS 2008 data used for these analysis were not the raw data in unadjusted form. DHS disseminates the data as recode files.

These recode data files have had their data standardized using pre-specified definitions for specific categories of health, e.g. child health. This allows comparison to be made across surveys from different countries conducted in the same phase (period).The different available recodes within this dataset included the: household, birth, children's, male, couples, individual recode files, all with spread-sheets in SPSS® format.

Access to the full dataset from the NDHS 2008 was provided by ICF international's online portal, Measure DHS in August, 2009. The recode files were provided as SPSS® files. The child recode files were used here; they contained variables directly associated with the health, survival and illness concerning children aged 60 months (cite). This recode contained 998 variables.

Examining the raw data of NDHS, it emerged that the age range of children available was between the ages of 1 month and 59 months- the age group involved in under-5 mortality. The Under- mortality rate" is actually an estimate computed from life tables complied from limited population and health data sources in developing countries (Korenromp et al., 2004). The under-5 rate is frequently used in health policy in developing countries as a representation of overall child mortality (Hill et al., 2007) The index approximates to the overall mortality proportion (better than infant mortality) due to the predominantly high proportions of children in the <5 age group (Hill et al., 2007; Korenromp et al., 2004).

The Variables of Interest

In 2004, the UNICEF and WHO convened a joint meeting in New York, USA, the primary objective of this meeting: the identification of key child survival indicators. These indicators were to be used to determine the effectiveness of active interventions across regions and individual countries. The selection of indicators was based on pooled global evidence showing their significant impact on survival indices. They were subsequently adopted for use in monitoring progress towards the 4^{th} (Child survival) and 5^{th} (Maternal Health) millennium development goals (MDG)(UNDP, 2007; UNICEF, 2004).

The Nigeria Child Health Policy 2006, wholly adopted the indices approved at UNICEF/WHO 2004, for use in national and sub-regional monitoring in the country (FMOH, 2006). This is the key reason, this priority list served as the primary guide for identifying the relevant variables analysed for this section of the study. Following a perusal of the DHS dataset, 30 variables were selected which reflected the

indicators highlighted in the priority list. The table below shows these indicators, against their relevant DHS representative variables.

Ensuring Variables Suitable For Analysis - Recoding Categories

The mortality variable in the DHS was recorded as a dichotomous outcome, (responses to question "Is Child alive: "yes" or "no"). Preliminary cross tabulations of the 30 variables against the mortality variable showed that only 16 of the variables could be analysed for mortality risk directly This was because the remaining 14 variables had only collected information about living children.

At this time, it also became clear that certain of the suitable variables contained in excess of 5 categories, for example the variables "water supply" (18 categories), "toilet type" (14 categories). In such situations, where data responses are limited in number, data being spread over multiple categories may result in certain categories registering as empty of responses. In SPSS this is described as an excess of "null sets". As a result, of this concern, all variables with over 5 categories were converted, with categories being amalgamated as best possible.

This process was based on proximal theoretical relationships, and extending numerical set limitations within definition of the variable. Summary of this recoding process are available in Appendix A *Table 6.*

The degree of collinearity among the selected variables was also examined to determine if there were any which were too closely related within the sampled data. Indeed a model with highly correlated predictors may still indicate how well the covariates will predict the dependent variable. However, such a model could be misleading about the relative significance of effect on the dependent (Bland, 2000). The test showed acceptable levels of correlation among the indicator variables, maximum <0.5 (ibid.).

Analysis

Univariate analysis

The final set of 16 variables being cross-tabulated against the mortality outcome; served as the definitive univariate analysis for this study. The Pearson's Chi-squared test was used to determine association with a P-value of < 0.05 considered as significant; where cell counts of less than 5 were likely, within the smaller set of data for Lagos. For these, a Fisher's exact test was used to calculate for significance.

This process was done for the entire Nigerian data set and repeated for data only from Lagos respondents, using SPSS18®. The summaries of the results of this process are displayed in Table 2 below.

Binary logistic regression

In order to ascertain the independence of the associations between mortality and the selected survival indicators, binary logistic regression was selected. Binary logistic regression looked directly at the association between the mortality (dichotomous dependent) variable and the independent health indicator variables. The technique was based on the assumption that the odds of mortality among the population would be affected by the inclusion or removal of these variables.

The differences in odds were thus expected to follow a Chi-squared distribution; which was interpreted relative to a pre-defined level of significance. (This was designated to be 0.05 or 95% for this analysis). Thus, where the resulting Chi squared between the variables was greater than the threshold for significance, the null hypotheses (of no effect on mortality risks to the children) could be easily rejected.

The regression model was designed to adjust for the independent impact of each variable on the dichotomous mortality outcome. Multiple categories of the independent variables were examined relative to a selected reference category. The selection of these categories was based on either (where relevant) the theoretical importance of the category, or the modal proportion. This allowed meaningful interpretations about the observed relationships to the theoretical mortality risk, relevant in the population of children studied.

Results

The univariate analysis showed 13/16 variables significantly associated with mortality among the national population (see table above). Of these only 5 were significant in Lagos. They included:

- “Duration of breastfeeding in months”
- ” Unmet need for family planning”
- “Birth weight <2500g”
- ” Birth order”
- “Tetanus prophylaxis in pregnancy”

Following the logistic regression, 11 of the 13 significant variables in the national population, remained independent in their effect on odds of mortality (see Table 0.2 below). For the Lagos population, only 2 out of the 5 significant retained independence of effect on the odds of mortality. These variables were:

- “Duration of breastfeeding in months”
- “Unmet need for family planning”.

The table below summarises the progress of the 16 variables through the univariate and logistic regression, while the following tables show the pattern of distribution of variables, regarding the mortality outcome in both populations.

Table 3: Results of Binary logistic Regression of Variables significant on univariate analysis in Lagos State

	LAGOS STATE MODEL	P values	Adjusted odd for survival	95% Confidence Interval for AOR	
				Lower	Upper
1	**UNMET NEED FOR FAMILY PLANNING: RECOMMENDED BEHAVIOUR: (USED FAMILY PLANNING TO SPACE AN LIMIT**				
	INFECUND	0.044	0.088	0.008	0.942
	DESIRE BIRTH<2YEARS	0.021	0.365	0.155	0.858
2	**BREASTFEEDING DURATION IN MONTHS:RECOMMENDED DURATION 1-12MONTH**				
	0M	0.016	0.092	0.013	0.638
	DONT KNOW	<0.001	0.021	.008	.057

Table 4: Results of Binary logistic Regression of Variables significant on univariate analysis in Nigeria

		P value	Adjusted odds for survival	95% Confidence Interval for AOR	
				Lower	Upper
1	**UNMET NEED FOR FAMILY PLANNING- reference interval: RECOMMENDED BEHAVIOUR USING FAMILY PLANNIGN TO SPACE AND LIMIT**				
	INFECUND	<0.001	.494	.375	.651
	UNMET TO SPACE/LIMIT	0.004	.769	.642	.921
	DESIRE BIRTH<2YEARS	0.005	.785	.662	.930
2	**BREASTFEEDING DURATION IN MONTHS: reference interval- RECOMMENDED INTERVAL 1-12 MONTHS**				
	0M	<0.001	.073	.061	.087
	DONT KNOW	<0.001	.370	.327	.417
	OVER 24M	<0.001	16.100	7.158	36.213
	13-24M	<0.001	4.905	4.382	5.490
3	**TETANUS PROPHYLAXIS IN PREGNANCY (NUMBER OF INJECTIONS "SHOTS"): reference interva RECOMMENDED 1-3 SHOTS**				
	>7 SHOTS	<0.001	.288	.255	.325
4	**BIRTHWEIGHT: reference interval: WHO DEFINITION OF LOW BIRTH WEIGHT**				
	2500-3500G	0.048	1.545	1.004	2.377
	OVER 3500G	0.018	.631	.431	.924
5	**BIRTH ORDER: reference interval: 1-6 BIRTH ORDER (MODAL VALUE)**				
	BIRTH ORDER 7-12	<0.001	.714	.638	.799
6	**RELIGION: reference interval: ISLAM (MODAL VALUE)**				
	TRAD RELIGION	0.028	1.479	1.044	2.094
7	**ETHNICITY: reference interval HAUSA (MODAL VALUE)**				
	EKOI	0.003	2.155	1.295	3.584
	FULANI	0.002	1.306	1.105	1.543
	IBIBIO	0.047	1.491	1.005	2.214
	YORUBA	<0.001	1.641	1.305	2.062
8	**TYPE OF RESIDENCE: reference interval RURAL (MODAL VALUE)**				
	RURAL	<0.001	.767	.674	.874
9	**EDUCATION: reference interval NO EDUCATION (MODAL VALUE)**				
	HIGHER EDUCATION		1.542	1.093	2.176
10	**WEALTH INDEX LEVEL: reference interval POOREST (MODAL VALUE)**				
	POORER	0.009	1.178	1.041	1.332
	MIDDLE	0.037	1.164	1.009	1.343
	RICHER	0.006	1.282	1.073	1.533
	RICHEST	0.006	1.456	1.117	1.899
11	**TOILETS TYPES : reference interval PIT (MODAL VALUE)**				
	HANGING	0.04	1.1	1.0	1.2

Variables with significant associations with mortality following binary logistic regression of the Lagos sub- sample

Duration of Breastfeeding

Within the Lagos population, children who were not breastfed at all were at significantly reduced adjusted odds for survival (p=0.016; AOR=0.09; 95%CI 0.01-0.64) compared with the reference group who were breastfed for the recommended 1-12month interval. Reduced odds were also seen among children whose mothers could not say how long they had breastfed (p<0.001; AOR=0.02; 95%CI 0.01-0.06.

Nationally, this trend was the same with significantly reduced odds experienced among: children who did were not breastfed at all (*p<.001*; AOR=0.07 95% CI 0.06-0.09) and those whose mothers could not say how long they had breastfed (*p<0.001*; AOR=0.37 95% CI 0.33- 0.42).

The national population also had significantly raised adjusted odds for survival among children breastfed for longer durations than the reference. These included: children breastfed between 13-24 months (*p<0.001*; AOR=4.91 95% CI 4.38-5.50) and those breastfed for over 24 months (*p<0.001*;AOR= 16.1 95%CI 7.16-36.21).

Unmet Need for Family Planning

In Lagos State, the children of women in the category established as those "using family planning to space and or limit" were found to be the largest category; while nationally, the modal category was "Women who desire birth within 2 years".

Following logistic regression, the children of Lagos women who were "Infecund" (*p=0.04*; AOR=0.09 95% CI 0.01-0.94), and those who "Desired birth

within two years" (*p<0.021*, AOR=0.37; 95% CI 0.16- 0.86), were found to have experienced significantly decreased odds for survival relative to women "Using Family planning to space and limit".

The national regression showed that relative to children of women "Using Family planning to space and limit", the following children had significantly reduced adjusted odds for survival: mothers were: Infecund (*p<0 .001*; AOR 0.49 95% CI 0.38-0.65), mothers who had an unmet need to either space or limit (*p=0.004*; AOR=0.77 95% CI 0.64-0.92), and those who desired to give birth in less than 2 years (*p=0.005;* AOR=0.79 95% CI 0.66-0.93).

Variables with significant interactions following logistic regression in the National sample

Religion

Of the 28476 national respondents, the most commonly reported religion, as practiced, was Islam (57%). In Lagos, the commonest religion was Christianity (59%) among the 740 Lagos respondents. The univariate analysis showed that religion was significantly associated (p<0.001) with mortality variable only among the national population.

The binary regression model examined the different categories of religion surveyed relative to a single reference religion- the modal category-Islam. Only children of mothers practicing Traditional religion showed significantly raised adjusted odds of survival (*p=0.028* AOR= 1.5, 95% CI 1.04-2.09), compared with Islam.

Ethnicity

Children of Hausa ethnicity were the largest proportion nationally; while in Lagos state the Yoruba ethnicity were the mode. Univariate analysis showed ethnicity was significantly associated with mortality nationally, but not in the Lagos population.

Within the national population, (when compared with the reference category-Hausa) children within the following ethnic categories, had significantly raised adjusted odds of survival: Ekoi (*p=0.003* AOR=2.16, 95%CI 1.30-3.58), Fulani (*p=0.002*, AOR= 1.30 CI 95% CI 1.11-1.54), Ibibio (*p=0.047*, AOR=1.491 CI 95% 1.01-2.21), Yoruba (*p<0.001* AOR 1.64, CI 95% 1.31-2.06).

Place of Residence

The distribution of children according to place of dwelling was predominatly urban in Lagos (90.2% urban), in contrast to the pattern nationally (26.4%.urban).

Following logistic regression this association showed reduced adjusted odds for survival for rural living among the national population: (*p<0.001*, AOR=0.77, 95%CI 0.67- 0.87). No significant association between place of residence and mortality was found in the Lagos population.

Educational Attainment

Higher levels of education were commoner among the Lagos population, than nationally, from any secondary through to higher education. Children in the national population had significantly raised odds of survival when their mothers had “Higher education”, (*p=0.014*, AOR=1.542; 95% CI 1.09-2.18) relative to the modal category of mothers (“No education”). The association between this variable and mortality did not attain significance in Lagos.

Wealth Index

The distribution in the Lagos and national populations showed a distribution, with 93% of respondents among RICH and RICHEST categories while the national distribution was more evenly spread out across groups. Both univariate and regression analysis showed significant associations between this variable and mortality, nationally.

The regression showed that all other categories of income among children in the national population had significantly raised adjusted odds of survival (POOR p=0.009, MIDDLE p=0.037, RICHER p= 0.006, RICHEST p= 0.006) compared with those in the "POOREST" category.

Tetanus Prophylaxis in Pregnancy

The largest proportions of women in Lagos had received between 1 and 3 injections for the prevention of tetanus ever, before the birth of their last child; while among the national population, 38% of women reported receiving over 7 injections for tetanus, ever, before the birth of their last child.

The children of the women in the national sample, (with over 7 injections) showed significantly reduced adjusted odds of survival ($p<0.001$;AOR=0.29 95% CI 0.26-0.36) compared those whose mothers had received the recommended schedule of 1-3 injections. Here the reference category was based on the recommended behaviour, rather than the modal value.

Birth-Weight

The largest groups of children in both the national (89%) and Lagos (53%) populations, had birth weights of over 3500g. Birth weight was not associated with mortality in the Lagos population.

A reduced odds of survival was found among children in the national population who were heavier at birth- birth weights were above the threshold birth-weight, 3500g- relative to low-birth-weight children (*p=0.018*; AOR=0.631 95% CI 0.43- 0.92). However, the odds of survival among children whose birth-weights were in the normal range 2500g-3500g, were significantly increased relative to the low-birth-weight children (*p=0.048*; AOR=1.55 95% CI 1.00-2.38).

Birth Order

The largest proportions of children were within birth order 1 and 6 for both populations. Children born later within the family experienced significantly reduced adjusted odds for survival (order above 7) compared with those born earlier of orders (*p<0.001*;AOR=0.71 95% CI 0.64-0.8)

Discussion

The health indicators within the Lagos State population demonstrate patterns of distribution which are different from the National patterns. From these analysis, it has emerged that Lagos state children were at greater independent risk from maternal practices, relative to any other groups of determinants. Also it appeared that the impact of socioeconomic determinants, are more difficult to appreciate within smaller sub-groups of the population with similar characteristics.

Limitations of the Analysis

The NDHS 2008 was invaluable as a data source for these analysis; the main limitations, included issues commonly associated with the use of secondary data. These included:

There was a lack of control of the research question which directed the data collection (Boslaugh, 2007; Kiecolt, 2005), in this instance, the State level data were not collected specifically for use with sub-population analysis. As such the relatively small size of this sub- population limits the direct application of these findings on their own However this limitation was offset by the supportive role of the analysis within the research: towards informing wider analytic strategy; and providing contextual information during final interpretation of the collated primary data (Yin, 2009).

Another limitation was the lack of control of the format of the data collected. This was particularly true regarding the definitions of variables-the absence of mortality outcome data regarding key variables; as well as the type and number of variable categories included. Although these were overcome, as described, the interpretation of associations is done with caution. This is particularly salient due to the attending inherent errors in such data associated with entry, coding, and sampling (Kiecolt and Nathan, 1990).

Summary

Although focused on emergency care, the boundary of this case as defined, allows for any information on the background population mortality risks. The two significant variables are recognizable as directly representative of determinants

within the Mosley and Chen framework's proximate group. This suggests women's health based practices are a very important area for potential intervention in this society.

Surprisingly none of the distal determinant variables made a measurable effect on the risks for mortality in the Lagos population. This is suspected as being at least partly due to

A) The small sample size
B) The unique demographics of Lagos mothers relative to the rest of Nigeria within the DHS sample (higher wealth indices, and levels of educational attainment)

The pre-existing literature on the breastfeeding behaviour in Lagos State supports these current analysis. Regarding the unmet need for family planning variable, there is evidence that the decisions among Lagos mothers are based on very different expectations of family size from the national norms.

These analysis suggest that in order to determine the proximate practices among Lagos parents (mothers), require further examination. In particular, their motivation for individual decision making should be investigated. This, while accepting that wider expected impact of traditionally predictive indices, such as wealth, may exert different/ mitigated effects in this population.

In presenting background information towards designing and conducting this case study, this chapter presented background information on the wider population-based child mortality risks in Lagos. The next chapter provides further background for this research-a review of literature surrounding the risks, and outcomes of paediatric emergency care as provided in developing countries.

APPENDIX B

Section 1: The Original Series of Search Terms as Rendered in OVID SP®

1 developing country.mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

2 (Afghanistan or Albania or Algeria or American Samoa or Angola or Argentina or Armenia or Azerbaijan).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

3 (Bangladesh or Belarus or Benin or Belize or Bhutan or Bolivia or Bosnia or Botswana or Brazil or Bulgaria or Burkina Faso or Burundi).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

4 (Cambodia or Camero*n or Cape Verde or Central African republic or Chad or Chile or China or Colombia or Comoros o Congo or Costa Rica or Cote D'ivoire or Cuba).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

5 (Djibouti or Dominica or Dominican republic or Ecuador or Egypt or El Salvador or Eritrea or Ethiopia).mp. [mp=ab, hw ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

6 (Fiji or Gabon or Gambia or Georgia or Ghana or Grenada or Guatemala or Guinea or Guyana or Guinea Bissau).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

7 (Haiti or Honduras or India or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kenya or Kiribati).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

8 (Korea or Kosovo or Lao or Latvia or Lebanon or Lesotho or Liberia or Libya or Lithuania).mp. [mp=ab, hw, ti, ot, bt, nm ui, tx, ct, sh, tn, dm, mf]

9 (Macedonia or Madagascar or Malawi or Malaysia or Maldives or Mali or Marshall Islands or Mauritania or MAuritius).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

10 (Mayotte or Mexico or Micronesia or Moldova or Montenegro or Mongolia or Morocco or Namibia or Nepal or Nicaragua or Niger or Nigeria or Mozambique or Myanmar).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

11 (Pakistan or Palau or Panama or Papua New Guinea or Paraguay or Poland or Philipines or Peru).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

12 (Romania or Russia or Rwanda or Samoa or Senegal or Sao Tome* or Principe or Serbia).mp. [mp=ab, hw, ti, ot, bt, nm ui, tx, ct, sh, tn, dm, mf]

13 (Seychelles or Sierra Leone or Solomon Islands or Somalia or South Africa or Sri Lanka or St Kitts or St Lucia or Nevis or St Vincent or Grenadines or Sudan or Suriname or Swaziland or Syria).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

14 (Tajikistan or Tanzania or Thailand or Timor Leste or Togo or Tonga or Tunisia or Turkey or Turkmenistan or Uganda o Ukraine or Uruguay or Uzbekistan).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

15 (Vanuatu or Venezuela or Vietnam or West Bank or Gaza or Yemen or Zambia or Zimbabwe).mp. [mp=ab, hw, ti, ot, bt nm, ui, tx, ct, sh, tn, dm, mf]

16 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15

17 (low adj1 income adj1 countr*).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

18 (poor* adj1 countr*).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

19 16 or 17 or 18

20 child.mp. or exp Child/

21 emergency medical services.mp. or exp Emergency Medical Services/

22 emergency care.mp.

23 (emergency care adj3 hospital*).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]

24	exp Emergency Service, Hospital/ or emergency service.mp.
25	hospital emergency.mp.
26	(emergency adj3 admit*).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]
27	(emergency adj3 admission).mp. [mp=ab, hw, ti, ot, bt, nm, ui, tx, ct, sh, tn, dm, mf]
28	intensive care.mp. or exp Intensive Care/
29	critical care.mp. or exp Critical Care/
30	urgent medic* care.mp.
31	21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30
32	19 and 20 and 31
33	remove duplicates from 32

Section 2: 25 Studies From Random Sample For Evaluating Electronic Sorting 1275 From Initial 3725

AUTHOR(S)	YEAR OF PUBLICATION	TITLE OF STUDY	LANGUAGE	COMMENT REGARDING ELIGIBILITY
A. H. Aamir, S. U. Rehman, S. S. Ali and M. Z. Jadoon	2005	Pattern of micro vascular complications and associated comorbidities amongst diabet patients at a tertiary care hospital	English	study does not report children in abstract
G. Acquatella, J. Dessenne, A. Diez, Garoffalo, A. Gonzales A. Maury, I. Montes de Oca, E. T. de Roura, C. Romero, Su, x00E and A. rez	1978	[Prospective study of the survival of patients of the HU lymphoma unit in five years. Application of the actuarial analysis (author's transl)]	Spanish	no abstract available
Adityanjee, D. Mohan and N. N. Wig	1988	Determinants of emergency room visits for psychological problems in a general hospital	English	study does not report children in abstract
M. Agah, P. Yahyavi and F. Roudneshin	2006	Comparison between classic laryngeal mask and cobra perilaryngeal airway during mechanical ventilation	English	study does not report children in abstract
H. Y. Ahn, J. Lee and H J. Shin	2010	Kangaroo care on premature infant growth and maternal attachment and post-partum depression in South Korea	English	study reports only neonates in abstract
A. Bagic, D. Bagic and I. Zivkovic	2009	First population study of the general public awareness and perception of epilepsy in Bosnia and Herzegovina	English	study reports on epilsps in adults-not children
A. Berglund, H. Lefevre-Cholay, A. Bacci, A. Blyumina and G. Lindmark	2010	Successful implementation of evidence-based routines in Ukrainian maternities	English	study reports only neonates in abstract
M. Budalica, S. Guska, A. Hadzismailovic, M. Kacila, Z. Cerimagic and E. Hajdarevic	1996	Isolated war injuries of the thorax. [Serbian]	Serbian	study does not report children in abstract
L. W. Chambers, P. Rhee, B. C. Baker, J. Perciballi, M. Cubano, M. Compeggie, M. Nac and H. R. Bohman	2005	Initial experience of US Marine Corps forward resuscitative surgical system during operation Iraqi freedor	English	study reports on deve;oped country personnel USMC
T. J. Chen, S. H. Chen and K. S. Lee	1990	The need for neonatal intensiv care in Taiwan: historical perspectives. [Chinese]	Chinese	study does not report children in abstract

I. C. Chi, T. Agoestina and J. Harbin	1981	Maternal mortality at twelve teaching hospitals in Indonesia-an epidemiologic analysis	English	study does not report children in abstract
J. C. Coelho, J. C. Wiederkehr, M. A. Lacerda, A. C. Campos C. Zeni Neto, J. E. Matias and G. M. Campos	1997	Cost of liver transplantation a the Clinical Hospital of the University of Parana, Brazil. [Portuguese]	Portuguese	study reports transplantation-not acu
A. M. D. Culebras	2000	International Newsletter	English.	no abstract available
E. Dilber, M. Cakir, E. Erduran, I. Koksal, E. Bahat, M. Mutlu, A. Y. Celtik and A. Okten	2010	High-dose methylprednisolon in children with Crimean-Congo haemorrhagic fever	English	study does not report children in abstract
R. Elgie, R. E. Sapien and L. Fullerton-Gleason	2005	The New Mexico school nurs and emergency medical services emergency preparedness course: program description and evaluation	English	study does not report children in abstract
S. Firosh Khan, R. Ashalatha, S. V. Thoma and P. S. Sarma	2005	Emergent EEG is helpful in neurology critical care practic	English	study does not report children in abstract
E. Girao, A. S. Levin, M. Basso, S. Gobara, L B. Gomes, E. A. S. Medeiros and S. F. Costa	2008	Seven-year trend analysis of nosocomial candidemia and antifungal (fluconazole and caspofungin) use in Intensive Care Units at a Brazilian University Hospital	English	study does not report children in abstract+ ICU study
R. I. Glass, W. Cates, Jr., P. Nieburg, C. Davi R. Russbach, H. Nothdurft, S. Peel and R. Turnbull	1980	Rapid assessment of health status and preventive-medicin needs of newly arrived Kampuchean refugees, Sa Kaeo, Thailand	English	study does not report children in abstract
M. Haberal, H. Telatar, N. Bilgin, N. Buyukpamukcu, B. Kayhan, Y. Bayraktar, G. Arslan, M. Karamehmetoglu, H. Gulay, S. Serf, B. Uzunalimoglu, M. Turan, M. Koc and E. Hamaloglu	2008	Living-related liver transplantation in an adult and a child	English	study does not report emergency care
M. A. Haberal	1995	An eleven-year survey of electrical burn injuries	English	study does not report children in abstract
S. B. P. R. N. C. S. Malone and J. J. M. S. N. R. N. C. Osborne	2000	Improving Treatment Adherence in Drug Abusers Who Are HIV-Positive	English.	study does not report children in abstract
Nicklausy	1995	complications of jet ventilatio in neonates	English	study reports only neonates in abstract

M. A. Rogovoi and R. V. Nikogosian	1976	Organization of traumatological service to the population of small industrial towns. [Russian]	Russian	no abstract available
A. A. Zeitoun, H. I. Dimassi, D. Y. El Kary and M. G. Akel	2009	An evaluation of practice pattern for venous thromboembolism prevention in Lebanese hospitals	English	study does not report children in abstract
Y. Zverev and A. Adeloye	2001	Left-handedness as a risk factor for head injuries	English	study does not report children in abstract

Section 3: INTER-REVIEWER AGREEMENT

Two different sets of 100 article titles were sent to the supervisors. Each set was made up of 4 sets of 25 consecutive titles. The inter-reviewer agreement was calculated using the Kappa coefficient. This corrects for the probability of titles being selected by chance (Blackman and Koval, 2000). The current Cochrane collaboration guidelines consider the Kappa statistic helpful in the piloting stages of reviews, to help refine inclusion criteria (Higgins and Green, 2008). This first title-selection showed less than fair agreement between the principal reviewer and each co-reviewer. This was calculated as 34% and 41%, between the principal reviewer and co-reviewers 1 and 2 respectively.

The review team thus implemented a series of discussions to determine how well each member interpreted the inclusion criteria with reference to the research question. These helped re-phrase the inclusion and exclusion criteria, and unify interpretations of these criteria towards addressing the research question. A subsequent review of independent sets of 30 titles selected in the same way reflected very good and excellent agreement (74% and 87%), respectively.

The next stage involved samples of 20 abstracts each being subjected to quality control, also with 2 reviewers. Here, the inter-reviewer agreement with 2 co-reviewers showed Excellent and very good agreement (78% and 74%).

The third and final stage, of selection control involved a random sample of 20 full length article texts. This process produced excellent agreement (83%) between 2 reviewers.

Section 4: Data Extraction and Management

A new study-extraction form was designed expressly for this review. The purpose of this form was to facilitate easy management of the relevant data from each of the eligible studies.

Using this form also ensured that the key findings were consistently retrieved from each article, and each completed form effectively served as an annotated summary of a study. As a result, the analytical synthesis could be carried out using the form database. Thus allowing review authors to work without requiring a re-consultation of the original sources (SCIE, 2006; Petticrew and Roberts, 2006).

Once a draft structure for the form was proposed, two eligible articles were used to pilot it. This allowed slight adjustments in the design to be made, following joint discussion by the researcher and both academic supervisors. The final design of this form is shown below:

Study's Original Data Extraction Form

Reference number in Endnote database		
General information	*Date of extraction*	
	Researcher extracting data	
	Author(s)	
	Title	
	Year	
	Publication type	
	Country of origin	
	Funding source(s)	
Study information	*Aim /objectives of study*	
	Study design	
	Study Inclusion and exclusion criteria	
	Recruitment procedure	
	Data Collected for Analysis	
Participant information	*Characteristics: Age range*	
	Gender distribution (M:F)	
	Socio-economic status	
	Main Disease conditions/Diagnosis	
	Referral?	
	Type of health facility : Teaching? University/District/Genera Hospital	
	Geographical Location of Facility.	
	Description of additional intervention/treatment	
Results of analysis	*Number of participants available / Number of participants included in analysis*	
	Number of withdrawals, exclusions, losses to follow-up	
	Type of analysis used	
	Summary of results (with respect to study aim)	
	Type of outcome data e.g. Dichotomous data/continuous data	
	Evidence of association with morbidity, and or mortality outcome?	
	Odds Ratios	
	P values	
	Confidence Intervals	
	Other relevant findings	
Any additional relevant information	*Adverse events*	
	Difficulties encountered?	

Section 5: The Quality Appraisal Tables Showing the Summary Assessments from the CASP Instrument, Questions for the Cross Sectional, Cohort and Trial Designs

CROSS SECTIONAL STUDIES-											
				CORE QUALITY QUESTIONS							
	study	ADDRESSES CLEARLY FOCUSED ISSUE	APPROPRIATE METHOD USED TO ANSWER QUESTION	RECRUITMENT APPROPRIATE/ ACCEPTABLE	SELECTION MEASURES REFLECT ACKNOWLEDGEMENT / REDUCTION OF BIAS	DATA COLLECTION METHODS ALLOW RESEARCH QUESTION TO BE ADDRESSED	SUFFICIENT SAMPLE SIZE ?POWER CALC	MAIN RESULT	RIGOUR OF ANALYSIS	Confounders	GOOD/ACCEPTABLE
1.	ABATANGA 2009	Y	Y	Y	C	Y	C/N	TYPHOID PERF 68%; AC APPENDICITIS 16%, INT OBSTRUCTION 4.7%. IRREDUCIBLE HERNIA CASE FATALITY OF TP 12.6% CASE FATALITY OF GALL BLADDER DX 25% CASE FATALITY OF GASTRIC PERF 25% PERFORATED LYMPHOMA 50% OVERALL MORTALITY 9.7%--88.2% OF	Y	-	y

								WHICH IS TP			
2.	ABDURRAHMAN	Y	Y	Y	c	y	c/n	MAIN CAUSES OF MORTALITY WERE RTI, MEASLES, AND GASTROENTERITIS OVER HALF OF THESE DEATHS WITHIN 24 HRS OF ADMISSION MULTIPLE INTERRELATED CAUSES OF DEATH 7-12 MONTH AGE GROUP MOST VULNERABLE TO MORTALITY	Y	-	Y
3.	ADEJUYIGBE 1992	Y	Y	Y	C	Y	C/N	83.6% DIED FROM ROAD TRAFFIC ACCIDENTS, 152 OF 195 DIED ON ARRIVAL OR BEFORE TREATMENT COULD BE INSTITUTED CLINICAL GROUP 36 OF 43 HAD LAPAROTOMY-6 CONSERVATIVE; 1 DISCHARGED AGAINST MEDICAL ADVICE AUTO ACCIDENTS FALL FROM HEIGHT AND CRUSH INJURY	Y	-	Y

								WERE COMMONEST CAUSES OF THE AUTOPSY GROUP ACCIODENTS; WHILE AUTO ACCIDENTS, FALL FROM HEIGHT AND PENETRATION WERE THE MAIN CAUSES AMONG THE CLINICAL GROUP			
4.	ADESUKANMI 1998	Y	Y	Y	C	Y	C/N	THE CHILDREN REVIEWED FORMED 9% OF ALL CHILDREN SEEN AT THE FACILITY DURING THE PERIOD OF INTEREST ALL DEATHS RESULTING FROM ROAD TRAFFIC CRASHES AND FALLS OCCURRED WITHIN 24 HOURS OF ADMISSION TO THE HOSPITAL, WHEREAS DEATHS RESULTING FROM BURNS OCCURRED ON AVERAGE WITHIN 10 DAYS OF ADMISSION. TEN OF THE 11 DEATHS FROM	Y	-	Y

								ROAD TRAFFIC CRASHES (91%) WERE CAUSED BY HEAD AND MULTI-SYSTEMIC INJURIES. HOSPITAL LENGTH OF STAY RANGED FROM 1 TO 450 DAYS (MEAN, 4.59 DAYS; SD, +/- 16.64 DAYS)			
5.	AIKHIONBARE 1989	Y	Y	Y	C	Y	C/N	DEATHS OVER THE PERIOD STUDIED -10 YEARS 9.9% OF ALL ADMISSIONS MEASLES WITH COMPLICATIONS WAS RESPONSIBLE FOR 74 DEATHS (24.1 PERCENT). THOUGH THE COMMONEST MEASLES COMPLICATED WAS BRONCHOPNEUMONIA, DEATHS. THE COMPLICATION MOST LIKELY TO RESULT IN DEATH WAS LARYNGOTRACHEOBRONCHITIS PEM 23% OF ALL DEATHS	Y	-	Y
6.	ANGYO	Y	Y	Y	C	Y	C/N	**SEVENTY ONE PERCENT OF**	Y	C	Y

	1996							**THE CHILDREN ADMITTED WERE AGED 5 YEARS AND BELOW. FEBRILE CONVULSIONS WAS THE COMMONEST MANIFESTATION OF ACUTE SEVERE MALARIA, ACCOUNTING FOR 49.7% OF THE CASES. MAJORITY (97.8%) OF THE CHILDREN RESPONDED SATISFACTORILY TO CHLOROQUINE THERAPY WITH CLEARANCE OFPARASITAEMIA. ASSOCIATED BACTERAEMIA WAS DOCUMENTED IN 35 (7 %) OF THE 501 CHILDREN.**			
7.	ANTIA OBONG 1992	Y	Y	Y	C	Y	C/N	MAJOR CAUSES OF ADMISSION WERE MALARIA FEVER, RESPIRATORY INFECTIONS, SEVERE ANEMIA AND DEHYDRATION FROM DIARRHEA AND VOMITING. 5% OF THOSE ADMITTED DIED- (44% OF	Y	C	Y

								WHICH DIED IN 24 HOURS FF ADMISSION)—IMPLICATED ARE ANEMIA AND DEHYDRATION			
8.	AYOOLA 2005	Y	Y	Y	C	Y	N		Y	C	Y
9.	BAMGBOYE 1990	Y	Y	Y	C	Y	C/N	20.5% MORTALITY RATE OVER THE PERIOD. (AVE) 56.7% 0-12 INFANTS ADMITTED **AGE SPECIFIC MORTALITY** HIGHEST AMONG 13-24 MONTHS 27.2%, THEN 7-12 MONTHS 24.7%--LOWEST IN CHILDREN AGED ABOVE 2YEARS. **CAUSE SPECIFIC CASE-FATALITY** MEASLES 32.6% NUTRI DX 27.3% LOWEST – MALARIA 5.1%*	Y	C	Y
10.	BOSNIAK 2009	Y	Y	Y	C	Y	N	THIRTY-TWO (61.5%) PATIENTS WERE CLASSIFIED AS MILD MODERATE ENVENOMING, AND 20 (38.5%) WERE CLASSIFIED AS SEVERE	Y	C	Y

								ENVENOMING. 20 REQUIRED ADMISSION TO THE PICU 1 DIED SURVIVING PATIENTS WERE DISCHARGED FROM THE HOSPITAL IN 2.5+- 1.2 DAYS IN APPARENT GOOD CONDITION. THERE WAS NO SIGNIFICANT DIFFERENCE IN **LENGTH OF HOSPITAL STAY, NOR DUE TO DISTRIBUTION OF STING MONTHS, STING HOURS, STING SITES, SCORPION SPECIES, NUMBER OF STINGS, AND HOSPITAL ARRIVAL TIME ; OR USE OF ANTIVENIN THERAPY** BETWEEN SE AND MME GROUPS			
11.	BOWLEY 2007	Y	Y	Y	Y HIV confirmed by PCR children younger than 18				Y	Y MEDIAN AGE	Y

					months.						
12.	BUGAJE 2006	Y	Y	Y	C	Y	C/N	THIRTY FIVE PATIENTS SEEN IN THE PAEDIATRIC UNIT OF ABUTH DURING THE 3 YEAR 4 MONTHS STUDY PERIOD WERE DIAGNOSED AS HIV/AIDS. OF THIS NUMBER, 17 (48.5%) FULFILLED THE WHO CLINICAL CASE DEFINITION FOR AIDS. TWENTY FOUR (68.6%) WERE MALES AND 11(31.4%) WERE FEMALES GIVING A MALE TO FEMALE RATIO OF 2.1:1. THE MEAN AGE WAS 2±1.8YEARS (RANGE 2MONTHS-12YEARS), WITH 27(77.1%) BEING AGED TWO YEARS AND BELOW. MODE OF TRANSMISSION WAS VERTICAL IN 31 (88.6%) PATIENTS, VIA BLOOD TRANSFUSION IN 3 (8.6%)	Y	C	Y

								AND INDETERMINATE IN ONE (2.8%). RECURRENT FEVER AND COUGH WERE THE MOST COMMON SYMPTOMS SEEN, EACH ACCOUNTING FOR 29 (82.8%) OF REPORTED COMPLAINTS. RECURRENT/LONG STANDING DIARRHOEA WAS SEEN IN 25 (71.4%) OF CASES WHILE WEIGHT LOSS WAS DOCUMENTED IN 21 (60.0%) OF CASES. RECURRENT SKIN RASHES WAS SEEN IN 9 (25.7%) OF THE PATIENTS. OTHER LESS COMMON SYMPTOMS INCLUDED PAROTID SWELLING, JAUNDICE AND BODY SWELLING.			
13.	ELUSIYAN 2006	Y	Y	Y	C	Y	C/N	THE PREVALENCE OF HYPOGLYCAEMIA WAS 6.4 PER CENT IN OUR EMERGENCY WARD.	Y	C	Y

								HYPOGLYCAEMIA WAS FOUND TO BE ASSOCIATED COMMONLY WITH SEVERE MALARIA, SEPTICAEMIA, PNEUMONIA, AND PROTEIN ENERGY MALNUTRITION. PATIENTS PRESENTING AFTER 12 HOURS OF LAST MEAL ARE MORE LIKELY TO BE HYPOGLYCAEMIC P<0.001) COMPARED WITH THOSE PRESENTING WITHIN 12 HOURS OF LAST MEAL. CHILDREN PRESENTING IN DEEP COMA WERE MORE LIKELY TO BE HYPOGLYCAEMIC COMPARED WITH THOSE PRESENTING WITH LIGHT COMA P<0.01. PATIENTS WITH HYPOGLYCAEMIA WERE MORE LIKELY TO DIE, AND THUS STAY ON ADMISSION FOR SHORTER PERIODS			

								BECAUSE OF RISK OF DYING P<0.01			
14.	ERNEST ANDANUNOBI 2002	Y	Y	Y	C	Y	C/N	Ten percent (10%) had severe anaemia. Malaria, the leading cause of anaemia in this series, was found in 80% of the patients. Twenty patients (3.3%) died before transfusion while 50 discharged from the hospital against medical advice. Thcre was slight maleprepondera nce . Ages 2-5 years were the peak age group for severe anaemia . The hospital stay for majority (74.8%) ofthe patients was 72 hours or lcss. Mortality (Case fatality) increases with increase in transfusion emergency response interval within 24 hours.			y
15.	GEORGE	Y	Y	Y	C	C	C	MALARIA, HIV/AIDS AND	C	Y	y

	AND TAB ANS I 201 0							MENINGITIS WERE THE COMMONEST CAUSES OF DEATH ACCOUNTING FOR 27.8%, 21.1% AND 11.1% RESPECTIVELY (FIGURE 2). THIRTY NINE (43.3%) OF THE DEATHS OCCURRED WITHIN 24 HOURS. OTHERS WERE: BETWEEN 24 HOURS TO 48 HOURS 21(23.3%); B 48 HOURS TO 72 HOURS 10(11.1%); 72 HOURS TO 96 HOURS 13(14.4%) AND MORE THAN 96 HOURS 7(7.8%). FIFTY EIGHT (64.4%) OF DEATHS IN THE EMERGENCY WARD			
16.	GO H 199 9	Y	Y	Y	C	Y	C/N	CLINICAL FACTORS THAT WERE SIGNIFICANTLY ASSOCIATED WITH RESPIRATORY DISTRESS INCLUDED AGE OF LESS THAN 3 MONTHS ON ADMISSION, A FAMILY	Y		y

								HISTORY OF BRONCHIAL ASTHMA AND THE PRESENCE OF AN UNDERLYING ILLNESS, ESPECIALLY PREMATURITY LESS THAN 36 WEEKS RSV INFECTION OCCURRED MOST FREQUENTLY IN THE 3 - 6 MONTHS AGE GROUP WITH A MALE PREDOMINANCE. PATIENTS WITH AN UNDERLYING ILLNESS WERE ALSO MORE PRONED TO PROLONGED HOSPITAL STAY (11.0 ± 6.7 DAYS) THOUGH THIS WAS NOT OBSERVED IN PATIENTS WITH A FAMILY HISTORY OF BRONCHIAL ASTHMA (7.3 ± 4.5 DAYS).			
17.	HAMID 2005	Y	Y	Y	C	Y	C/N	ALMOST ALL CHILDREN (44/45) YOUNGER THAN SIX MONTH OF AGE REPORTED	Y		y

								BECAUSE OF DRUG POISONING OR THERAPEUTIC MISHAP COMPARED TO 56% OF THE CHILDREN OLDER THAN 6 MONTH WHO HAD HISTORY OF DRUG INGESTION (P-VALUE < 0.01). OUT OF 80 CHILDREN WITH POISONING BY PETROLEUM PRODUCTS (KEROSENE OIL AND OTHERS), 74 WERE YOUNGER THAN 5 YEARS OF AGE (25% OF THIS AGE GROUP) COMPARED TO ONLY 6 (12%) WHO WERE ABOVE 5 YEARS (P-VALUE 0.04). CHILDREN OLDER THAN 24 MONTHS WERE EXPOSED BY OTHER ROUTES MORE COMMONLY (42/161, 26%) COMPARED TO CHILDREN LESS THAN 24 MONTHS (28/185, 15%) WITH A P-VALUE OF 0.01.			

								EXPOSURE BY INHALATION WAS FOUND TO BE MORE COMMON IN THIS AGE GROUP (17%) COMPARED TO YOUNGER GROUP (8%) P-VALUE < 0.01. PARENTERAL ROUTE OF EXPOSURE WAS FOUND TO BE MORE COMMON IN CHILDREN FROM PERI-URBAN SLUMS (15) COMPARED TO THOSE FROM URBAN (3) OR EVEN RURAL AREAS (2) P-VALUE < 0.001.			
18.	IBEZIAKO AND IBEKWE 2004	Y	Y	Y	C	C	C	the leading causes of mortality beyond the neonatal period were severe malaria with severe anaemia in 30.0 percent, ALRTI in 19.3 percent and severe dehydration with shock in 10.9 percent.	C		y
19.	ISHAK 2008	Y	Y	Y	C	Y	C/N	THE MAJORITY OF PAEDIATRIC EMERGENCY CASES WERE DUE TO	Y	C	y

								RESPIRATORY SYSTEM PROBLEMS (28.6%) AND GASTROINTESTINAL PROBLEMS (25.5%); 36.4% OF CHILDREN PRESENTED WITH A DURATION OF COMPLAINT EXCEEDING 4 DAYS. ONE-THIRD OF CASES (33.2%) WERE TREATED WITH 3RD GENERATION CEPHALOSPORINS ALONE OR IN COMBINATION WITH OTHER ANTIBIOTICS. THE MORTALITY RATE WAS 1.9%. THE MOST IMPORTANT CAUSES OF DEATH WERE MOSTLY CARDIAC (32%) AND RESPIRATORY (20%).			
20.	JAFFAR 1997	Y	Y	Y	Y	N	N	One hundred twenty-four children (21.5%) died. Three-quarters of the deaths occurred within 24 hr of admission. Multiple logistic regression analysis showed that a cold periphery (odds	Y	C	y

								ratio [OR] 2.7), a deep coma (OR 2.0), and hypoglycemia (OR = 4. 1) were the clinical signs and laboratory parameters that predicted death most strongly. More than 90% of the children who died had at least one of these conditions. Also, children with elevated urea levels on admission or those who experienced multiple episodes of hypoglycemia or multiple convulsions subsequently were more likely to die.			
21.	KESKIL 1995	Y	Y	Y	Y	C	N	Among the hospitalized children, there were three patients defined as having a mild head injury on the basis of Glasgow Coma Scale scores of 15 who later had unfavorable outcomes. Clinical signs	Y	N	y

								that might identify potentially endangered patients with mild injury were gathered; these included the presence of post-traumatic amnesia, somnolence, irritability, anisocoria, local evidence of trauma to the head, associated injuries, history of altered consciousness, and skull fracture. We did not find any identifying clinical features and concluded that computed tomographic scanning is the only reliable answer. This will reduce avoidable mortality and morbidity by identifying the patients who are at higher risk than is at first evident.			
22.	KRUG 2004	Y	Y	Y	Y ICD 10 FOR DIAGNOSIS	Y	N	Two hundred and thirty-nine under-5 deaths occurred	Y		y

								in the health system. The case fatality rate for the total of 4 226 under-5 admissions was 5.7%. Seventy-four per cent of the under-5 deaths occurred during the first year of life; 31% during the first 24 hours in hospital. The main causes of death were lower respiratory tract infections (31.4%), AIDS (21.3%) and sepsis (13.4%). When adding all causes of death and contributing conditions, 61.9% were AIDS- or HIV-related. Eighty-three per cent of cases had administrative modifiable factors; 67% had modifiable factors at primary care level, 47% during admission/emergency care in hospital, and 55% during routine care.			

23.	MABIELA - BABELA 2009	Y	Y	Y	Y	Y	N	THE DELAY FOR ADMISSION WAS COMPARABLE FOR THE TWO GROUPS. THE DEATH RATE AT THE TIME OF ADMISSION WAS SIGNIFICANTLY HIGHER IN GROUP 1 THAN GROUP 2: 84.6 % VS. 15.4 % (P<0.01). THE MAIN REASONS FOR SEEKING EMERGENCY ROOM CARE IN GROUP 1 WERE FEVER (84.6%), DIGESTIVE PROBLEMS (44.2%), COUGH (35.7%), AND CONVULSIONS (13.9%). THE RATE OF HOSPITALIZATION WAS THE SAME IN THE TWO GROUPS: 56.7%IN GROUP 1 VERSUS 52.8%IN GROUP 2. THE MOST COMMON REASONS FOR HOSPITALIZATION WERE ACUTE GASTROENTERI	Y		y

								TIS (24.7%), BRONCHO-PULMONARY INFECTION (18.9%),MALARIA (17.3%), SEVERE SEPTICEMIA (9.3%) ANDORL INFECTION (8.1%). RISK FACTORS FOR HOSPITALIZATION INCLUDED AGE UNDER 2 YEARS, ARRIVAL BEFORE MIDNIGHT, AND MALNUTRITION.			
24.	MAGREE 2005	Y	Y	Y DISCHARGE NOTES FOR SELECTION	Y CXRs were reread and classified according to WHO standardized criteria for CXR-confirmed pneumonia. Findings Two hundred and forty-eight children with LRTI	Y	N	CXRs were obtained for 174 (70%) of these cases, of which 59 (34%) had CXR-confirmed pneumonia. The annual incidence of CXR-confirmed pneumonia was 428 cases per 100 000 children aged between 1 month and 5 years living in Greater Suva. If a similar proportion of the children for whom CXRs were unavailable were assumed to have CXR-confirmed	Y		y

								pneumonia, the incidence was 607 per 100 000. The incidence appeared to be higher in Melanesian Fijian than Indo-Fijian children. The case-fatality rate was 2.8% in all children with LRTI, and 6.8% in those with CXR-confirmed pneumonia			
25.	MAITLAND 2006	Y	Y	Y	C	Y	C	THE SENSITIVITY, SPECIFICITY, AND LIKELIHOOD RATIO OF THE WHO-RECOMMENDED ''DANGER SIGNS'' (LETHARGY, HYPOTHERMIA, OR HYPOGLYCAEMIA) TO PREDICT EARLY MORTALITY WAS 52%, 84%, AND 3.4% (95% CONFIDENCE INTERVAL [CI] ¼ 2.2 TO 5.1), RESPECTIVELY. IN ADDITION, FOUR BEDSIDE FEATURES WERE ASSOCIATED WITH EARLY CASE FATALITY: BRADYCARDIA,	Y		y

								CAPILLARY REFILL TIME GREATER THAN 2 S, WEAK PULSE VOLUME, AND IMPAIRED CONSCIOUSNESS LEVEL; THE PRESENCE OF TWO OR MORE FEATURES WAS ASSOCIATED WITH AN ODDS RATIO OF 9.6 (95% CI ¼ 4.8 TO 19) FOR EARLY FATALITY (P , 0.0001). CONVERSELY, THE GROUP OF CHILDREN WITHOUT ANY OF THESE SEVEN FEATURES, OR SIGNS OF DEHYDRATION, SEVERE ACIDOSIS, OR ELECTROLYTE DERRANGEMENTS, HAD A LOW FATALITY (7%).			
26.	MEIER 1998	Y	Y	Y	Y	Y	N	53 (71%) HAD A SINGLE PERFORATION, AND 22 HAD MULTIPLE PERFORATIONS. DE´BRIDEMENT AND TWO-LAYERED CLOSURE WAS PERFORMED IN 71 (95%) AND RESECTION WITH ANASTOMOSIS IN 4 (5%). ILEUS	Y	-	y

								RESOLUTION WAS USUALLY NOT COMPLETE UNTIL THE EIGHTH POSTOPERATIVE DAY, AND THE MEAN TIME UNTIL THE SURVIVING CHILDREN WERE AFEBRILE WAS 10 DAYS.			
27.	MOLINERO 2009	Y	Y	Y CONSECUTIVE CASES	Y clear documentation in the medical chart or in the history obtained from the parents that	Y	N	ETIOLOGIES INCLUDED 5 (11%) CRYPTOGENIC, 5 (11%) REMOTE ySYMPTOMATIC, 9 (19%) FEBRILE, AND 28 (59%) ACUTE SYMPTOMATIC. GENERALIZED TONIC–CLONIC SEIZURES WERE THE MOST COMMON TYPE OF CONVULSIVE SE PRESENTATION. THE MEDIAN DURATION OF CONVULSIVE SE WAS 95 MIN (MEAN 541 MIN, RANGE 30–12,960 MIN) (TABLE 2). EXAMINING ALL CASES, THE MEDIAN DURATION OF SE IN URBAN CHILDREN (60 MIN) WAS SHORTER THAN	Y		

								THAT OF CHILDREN FROM RURAL AREAS (128 MIN), BUT IN THIS RELATIVELY SMALL SAMPLE THE DIFFERENCES DID NOT REACH STATISTICAL SIGNIFICANCE (T-TEST, P = 0.11). THE MEDIAN TIMES (2–5 MIN) UNTIL ACUTE CONVULSIVE SE PATIENTS FROM URBAN AND RURAL POPULATIONS RECEIVED THEIR FIRST AED AFTER ARRIVAL AT HOSPITAL ESCUELA WERE SIMILAR. THERE WERE NO CLEAR DIFFERENCES BETWEEN THE MEDIAN DURATION OF CONVULSIVE SE IN ACUTE SYMPTOMATIC ETIOLOGIES AND ALL OTHER ETIOLOGIES IN EITHER THE URBAN (T-TEST, P = 0.71) OR RURAL GROUPS (T-TEST, P = 0.15).			
28.	NAG	Y	Y	Y	Y	Y	N	LOW PLASMA	Y		y

	GAR 200 8			CHART REVIEW		Plasma cholines terase activitie s were measur ed		CHE LEVELS SUPPORT THE DIAGNOSIS OF INSECTICIDES POISONING, BUT NO SIGNIFICANT ASSOCIATION IS PRESENT BETWEEN THE SEVERITY OF POISONING AND PLASMA CHE LEVELS.			
29.	NAR CI 200 9	Y	Y	Y CASE FILE REVIEW	Y STANDARD SCALES GCS TRISS ETC	Y	N	THE MEAN AGE OF PATIENTS WAS 7.0 ± 4.34 (1–16) YEARS AND 50% OF THEM WERE MEN. THE TYPES OF THE TRAUMA WERE BLUNT IN 66 (89.2%) PATIENTS, PENETRATING IN 5 (6.8%) PATIENTS AND INJURY DUE TO GUN SHOT IN 3 (4.1%) PATIENTS. THE MEAN TIME BETWEEN THE TRAUMA AND ENTRANCE TO THE EMERGENCY SERVICE WAS 80.40 ± 36.67 (10–120) MIN. EMERGENCY OPERATION AND ELECTIVE SURGERY WAS PERFORMED IN 13 (17%) AND 20 (27%) PATIENTS,	Y		y

								RESPECTIVELY. THE MEAN LENGTH OF HOSPITALIZATION WAS 4.50 ± 7.93 (1–35) DAYS.SEVEN (9.5%) PATIENTS NEEDED ICU. THE MORBIDITY AND MORTALITY RATES WERE 60.8% (N = 45) AND 2.7% (N = 2), RESPECTIVELY. AIS, ISS, TRISS AND PTS WERE INDEPENDENT PREDICTORS OF MORBIDITY (P₩0.05). AIS AND ISS WERE INDEPENDENT PREDICTORS OF THE LENGTH OF HOSPITAL STAY (P₩0.05). RTS, TRISS, ISS AND PTS WERE INDEPENDENT PREDICTORS OF THE NEED FOR ICU (P₩0.05). AMONG LABORATORY FINDINGS, BLOOD yGLUCOSE, AST AND ALT WERE FOUND TO BE INDEPENDENT PREDICTORS OF LIVER TRAUMA.			

30.	OFOVWE2005	Y	Y	Y WARD NOTE REVIEW	Y Only case notes with definitive diagnosis after the laboratory investigation were selected.	Y	N	CHILDREN FIVE YEARS OF AGE AND UNDER WERE 466 (77.2%), AND MODAL AGE GROUP WAS 1-2 YEARS. FEBRILE CONVULSION WAS THE MOST COMMON NEUROLOGIC MORBIDITY SEEN (35.1%) FOLLOWED BY CEREBRAL MALANA (28.0%) AND THEN MENINGITIS (27.0%). AN INCREASED INCIDENCE OF CASES OCCURRED DURING THE RAINY SEASON. SIXTY-FOUR OUT OF 406 WITH COMPLETE RECORDS (15.8%) DIED. FORTY-SEVEN (67.2%) DIED WITHIN 24 HOURS OF ADMISSION. CEREBRAL MALANA AND MENINGITIS ACCOUNTED FOR ALL THE DEATHS.	Y		y
31.	ORIMADEGUN200	Y	Y	Y CASE RECORDS	Y confirmed with blood film microscopy	Y	N	CEREBRAL MALARIA ACCOUNTED FOR ABOUT ONE-FIFTH	Y		y

	7				and any of the WHO case definitions for severe malaria			(19.7%) OF ALL SEVERE MALARIA CASES. THE YEARLY PROPORTIONAL MORBIDITY RATE FROM SEVERE MALARIA RANGED FROM 8.7% TO 13.2% WITH SIGNIFICANT INCREASE FROM 2000 TO 2004 (X2¼48.49; DF¼5; P<0.001). SEVERE MALARIA ACCOUNTED FOR 12.4% OF ALL PAEDIATRIC DEATHS WITH AN ESTIMATED OVERALL CASE FATALITY RATE OF 9.6%. DEATHS FROM MALARIA WERE SIGNIFICANTLY yASSOCIATED WITH WASTING (Z-SCORE FOR WEIGHT-FOR-HEIGHT 2.0), AGE <2 YEARS, HYPOGLYCAEMIA AND RESPIRATORY DISTRESS. OUR DATA DEMONSTRATED AN INCREASED TREND IN			

								MORBIDITY FROM SEVERE MALARIA OVER THE STUDY PERIOD			
32.	OZDOGAN 2008	Y	Y	Y	Y Pre-arranged survey forms	Y	N	THE MAJORITY OF THE PATIENTS (N = 108, 54%) WERE AGED FROM 13 MONTHS TO 4 YEARS (P < 0.05). IN THE MAJORITY OF PATIENTS (66.5%, N = 133), POISONINGS WERE ACCIDENTAL. INTENTIONAL POISONINGS ACCOUNTED FOR 3.5% (N = 7) AND FOOD POISONING ACCOUNTED FOR 30% (N = 60) OF ALL CASES. THE FAMILIES HAD MORE THAN THREE CHILDREN IN 129 (97%) OF ACCIDENTALLY POISONED AND IN SEVEN (100%) OF INTENTIONALLY POISONED PATIENTS, SIX WERE GIRLS AND ONE WAS A BOY.	Y		y

								THE PARENTS OF MOST PATIENTS WERE UNEDUCATED. FURTHERMORE, MORE THAN TWO THIRD OF FAMILIES HAD LOW LEVEL OF INCOME.			
33.	POUDEL 2008	Y	Y	Y	Y Case of tetanus was defined with following 3 criteria	Y	N	AMONG CHILDREN WITH TETANUS, 31.5% RECEIVED 3 DOSES OF DPT AND 10.5% RECEIVED TT VACCINE AS TETANUS PROPHYLAXIS. IN 16.0% CHILDREN THERE WAS NO RECOGNIZABLE INJURY PRECEDING THE DISEASE. OTITIS MEDIA PRECEDED TETANUS IN 16.0%. ALL NEONATAL TETANUS CASES OCCURRED FOLLOWING UMBILICAL SEPSIS. DESPITE THEIR MOTHERS RECEIVING 2 DOSES OF TT DURING PREGNANCY, 2 NEONATES DEVELOPED TETANUS. A NEONATE DELIVERED IN HOSPITAL ALSO	Y		y

								DEVELOPED NEONATAL TETANUS. AVERAGE INCUBATION PERIOD WAS 7.7 DAYS AND AVERAGE ONSET TIME WAS 16.9 HOURS. SHORT ONSET TIME PREDICTED THE FAVORABLE OUTCOME (P= 0.005). GENERALIZED TETANUS CASES WERE 75.0%, NEONATAL TETANUS 21.0% AND CEPHALIC TETANUS 4.0%. GENERALIZED SPASM WAS PRESENT IN ALL CASES. COMMON AUTONOMIC DYSFUNCTIONS WERE FEVER, TACHYCARDIA AND HYPOTENSION. RESPIRATORY FAILURE, ASPIRATION PNEUMONIA, RHABDOMYOLYSIS AND SEIZURE WERE COMMON COMPLICATIONS.			
34.	ROBERTSON	Y	Y	Y	Y	Y	N	The three main causes of death were malaria or	N	N	C

	AND MOLYNEUX							malaria related illness (n = 7), pneumonia (n = 6), and malnutrition (n = 11). Forty seven children were categorised as needing emergency treatment. Thirty one had no treatment, and eight died; 16 received one or more recommended treatments, of whom five died. A total of 236 children were admitted during the study period, 27 of whom died.			
35.	SALARIA 2003	Y	Y	Y CASE RECORD REVIEW	Y Final emergency diagnosis that is recorded is based on clinical details and preliminary laboratory tests such as complete blood counts, CSF examination, X-rays and investigations like CT scan	Y	Y	THE MAXIMUM NUMBER OF PATIENTS WERE SEEN IN THE MONSOON MONTH OF JULY AND AUGUST. ABOUT HALF (52.5%) OF THE PATIENTS WERE INFANTS. FEVER (29.5%), BREATHING DIFFICULTY (17.4%) AND DIARRHEA (14.5%) WERE THE MOST COMMON PRESENTING SYMPTOMS.	N		y

					wherever indicated.			RESPIRATORY AND GASTROINTESTINAL ILLNESSES WERE THE TWO COMMONEST PEDIATRIC EMERGENCIES. ABOUT 2% (N-198) PATIENTS DIED WITHIN 24 HOURS OF HOSPITALIZATION; 42.3% DEATHS WERE IN THE AGE GROUP OF 0-28 DAYS. SEPSIS WAS THE MOST COMMON DIAGNOSIS IN PATIENTS WHO DIED			
36.	SEMPLE 1998*	Y	Y	Y RETROSPECTIVE CASE REVIEW	Y GCS	Y	N	THE AVERAGE TIME OF ASSESSMENT AFTER INJURY WAS 2.8 HOURS. EIGHTY-THREE INJURIES WERE CAUSED BY PEDESTRIAN MOTOR VEHICLE ACCIDENTS. THIRTY-SEVEN WERE ASSOCIATED WITH OTHER SERIOUS ORGAN SYSTEM INJURIES. FIFTY-EIGHT CHILDREN DIED AND ONLY 36 MADE A GOOD RECOVERY. ALL CHILDREN	Y		y

								WITH A GCS OF 3 - 4 DIED. FACTORS THAT WERE PARTICULARLY ASSOCIATED WITH A POOR PROGNOSIS WERE: (I) AGE LESS TH~N 3 YEARS; (IJ) ASSOCIATED EXTRACRANIAL INJURY; (IIJ) GCS 3 - 4 FOLLOWING RESUSCITATION ; AND (IV) DIFFUSE CEREBRAL SWELLING ON COMPUTED TOMOGRAPHY.			
37.	SIDDIQUI 2008	Y	C	Y RETROSPECTIVE CASE RECORD REVIEW	C HISTORY AS GIVEN	Y	N	OUT OF 67 PATIENTS, 53(79%) WERE MALE AND 14(21%) WERE FEMALE. MAJORITY OF CHILDREN 36(54%) WERE BETWEEN THE AGES 2-5 YEARS. KEROSENE OIL 59(88%) WAS THE MOST COMMONLY INGESTED HYDROCARBONS. SOCIOECONOMICALLY 48(71%) CHILDREN BELONGED TO LOWER MIDDLE CLASS.	C		y

								CHILDREN WITH LARGE FAMILY SIZE (> 3 SIBLINGS/FAMILY) WERE MORE COMMONLY AFFECTED. HYDROCARBON WERE MOSTLY 41(61%) STORED IN BEVERAGES AND MINERAL WATER BOTTLES. THE ACCIDENT OCCURRED IN 43 (65%) DURING SUMMER, WHEREAS 34 (56%) PATIENTS HAD PRESENTED WITH FEVER AND COUGH. CONSOLIDATION OF LUNGS WAS FOUND IN 38 (56%) CASES. MAJORITY 53(79%) OF THE PATIENTS WERE DISCHARGED FROM THE HOSPITAL WITHIN THE FIRST 24 HOURS OF ADMISSION. MALE, AGE <2 YEARS, LARGE FAMILY SIZE, POOR SOCIOECONOMIC STATUS, HOT			

								WEATHER (AFTERNOON AND SUMMER VACATIONS), KEROSENE OIL, UNSAFE CONTAINERS WERE THE MAJOR FACTORS LEADING TO HYDROCARBON INGESTION IN THIS STUDY.			
38.	SINGHI 1994	Y	Y	Y SAMPLE FRAME first 5 children who required hospitalization were included in the study irrespective of their primary diagnosis or severity of the illness.	STANDARD METHJODS FOR MEASURING BIOCHEMICAL MARKERS USED	Y	N	THE MEAN ±SE DURATION OF HOSPITAL STAY (7.7 ± 0.4 DAYS) AMONG 217 CHILDREN WITH SERUM SODIUM £ 130 MEQ/L WAS ABOUT 30% LONGER THAN THAT OF 510 CHILDREN WITH SERUM SODIUM £ 131 MEQ/L (5.9 ± 0 . 3 DAYS) (P<0.01). THIS REMAINED UNAFFECTED BY THE SEX AND THE AGE GROUP, BUT WAS FURTHER PROLONGED IN CHILDREN WITH HYPOTONIC - EUVOLEMIC TYPE OF HYPONATREMIA AS yCOMPARED TO THOSE WITH	Y		y

								HYPOVOLEMIC HYPONATREMIA. THE MORTALITY RATE IN 510 CHILDREN WITH NORMAL SERUM SODIUM CONCENTRATION (≥ 131 MEQ/L) WAS 5.3%. IN CONTRAST, IT WAS 17% IN 47 CHILDREN WITH SERUM SODIUM <125 MEQ/L (RELATIVE RISK 3.2; 95% CONFIDENCE INTERVAL 1.6-6.7) AND 9.3% IN 170 CHILDREN WITH SERUM SODIUM BETWEEN 126-130 MEQ/L (RELATIVE RISK - 1.8; 95% CONFIDENCE INTERVAL 1.1-3.7) (P<0.01). HYPONATREMIA IN ACUTELY ILL CHILDREN AT ADMISSION INDICATES A POOR PROGNOSIS.			
39.	SINGHI 2003	Y	Y	Y EMERGENCY DEP REGISTE	C SUBJECTIVE CLINICAL TRIAGE	Y	Y	42.1 PER CENT WERE ADMITTED AFTER INITIAL EVALUATION. THE	Y		y

				R RECORDS				RATIO OF BOYS TO GIRLS WAS 3 : 1; 47 PER CENT WERE INFANTS UNDER 1 YEAR OF AGE. THE COMMON REASONS FOR ATTENDING THE EMERGENCY DEPARTMENT WERE GASTROINTESTINAL AND RESPIRATORY ILLNESSES (23 PER CENT EACH), NEUROLOGICAL EMERGENCIES (16 PER CENT), AND NEONATAL PROBLEMS (15.6 PER CENT). POISONINGS WERE SEEN IN 0.6 PER CENT OF PATIENTS. EIGHT ILLNESSES, I.E. ACUTE DIARRHEA, UPPER RESPIRATORY INFECTION, PNEUMONIA, ACUTE ASTHMA, SEIZURES, MENINGITIS, AND NEONATAL SEPSIS AND JAUNDICE, COMPRISED			

								NEARLY HALF OF ALL THE EMERGENCY VISITS. ACUTE DIARRHOEAL DISEASES, PNEUMONIA, ASTHMA, AND ENCEPHALITIS SHOWED A DISTINCT SEASONAL TREND			
40.	WAMMANDA 2004	Y	Y	Y	Y	Y RECORD RETRIEVAL RATE 79.2%	N/C	Eighty one (40.1%) of these children died within 24 hours of admission, with 30/81 (37.0%) of them receiving no drug treatment up to the time their death. .	Y		y

COHORT STUDY DESGNS													
						CORE QUALITY ASSESSMENT QUESTIONS CASP							
	AUTHOR/ YEAR	**OUTCOMES OF CARE**	**ASSOCIATED FACTORS**	**CLEARLY FOCUSED ISSUE**	**APPROPRIATE METHOD**	**RECRUITMENT**	**MEASURES EXPOSURE ?REDUCTION OF BIAS**	**MEASURES of OUTCOMES ? REDUCTION OF BIAS**	**CONFOUNDING FACTORS IDENTIFIED? ANALYSED?**	**FOLLOW UP ADEQUATE**	**SUMMARY OF RESULTS**	**RESULTS APPLICABLE LOCALLY**	**Quality assessment**
1.	AHMAD 2009	SEROPOSITIVE STATUS COMMONER AMONG DEATHS-EARLY AND LATE 15 CASES, THE PARENT OR GUARDIAN ABSCONDED	MORTALITY DISCHARGED AGAINST ADVICE	Y	Y	Y DEFINED COHORT CRITICALLY ILL	Y A 'critically ill child' was defined as a child who satisfied the entry criteria developed by the World Health Organization (WHO) emergency	Y Bedside antibody assay for HIV 1/2 confirmatory testing for HIV if the first test was positive.	Y BLOOD CULTUR RESULTS PRESENTING PROBLEMS	C SURVIVAL TO DISCHARGE NOT BEYOND REPORTED	583 CHILDREN WERE RESUSCITATED, OF WHOM 401 (69%) SURVIVED TO HOSPITAL DISCHARGE. 26% OF ALL CHILDREN TESTED POSITIVE FOR HIV INFECTION (152/576), AND THIS WAS	Y	Good quality

		WITH THE CHILD. 7 CHILDREN WERE NOT TESTED; TWO REFUSED, 5 MISSED)						W PCR testing for HIV RNA.			HIGHEST IN PATIENTS PRESENTING WITH SHOCK (66%; 162/247), CLINICALLY DIAGNOSED SEPTICAEMIA (57%; 125/218) AND MALNUTRITION (40%; 24/60). OF 152 HIVSEROPOSITIVE CHILDREN, 30 (20%) DIED WITHIN 24 H, WHILE AMONG 424 SERONEGATIVE CHILDREN 36 (8.4%) DIED		

											WITHIN 24 H (P<0.001). LATER DEATHS (>24 H) WERE ALSO MORE COMMON IN HIV-SEROPOSITIVE CHILDREN COMPARED WITH HIVUNINFECTED PATIENTS (24.3% VS 12.3%; P<0.001). SURVIVAL TO 24 H WAS 80% (122/152) AND TO DISCHARGE 56% (85/152) IN HIV-SEROPOSITIVE CHILDREN. IN		

											HIV-UNINFECTED CHILDREN SURVIVAL TO 24 H WAS 92% (388/424) AND TO DISCHARGE 79% (336/424).		
2.	CEVIKER 1998	SUBARACHNOID HAEMORRHAGE AS THE ONLY INDEPENDENT SIGNIFICANT RISK FACTOR IN PREDICTING MORTALITY WITH A SENSITIVITY OF 42% AND SPECIFICITY OF 95%	MORTALITY	Y	Y	Y	Y GCS SCORE RANGING FROM 9 TO 13 AT THE TIME OF ADMISSION. THE PATIENTS WHO HAD THESE SCORES FOR AT LEAST 6 HOURS FOLLOWING THE INJURY OR WHO	Y	Y AGE, SEX, GCS SCORE ANISOCORIA, UNILATERAL OR BILATERAL FIXED PUPILS,	C NO ATTEMPT WAS MADE TO FOLLOW PATIENTS BEYOND THEIR DISCHARGE UNLESS THEY WERE ADMITTED FOR CHECK-UP EXAMINATIONS BY THEIR OWN	86% OF CHILDREN WERE GOOD RECOVERY OR MODERATELY DISABLED; 14% VEGETATIVE, SEVERELY DISABLED OR DEAD THERE WAS 15% OVERALL INCIDENCE OF OPERABLE HAEMATOMAS; OF WHICH 32%	Y	good quality

		ASSAULTS WERE VERY RARE IN THE TODDLER AND FALLS ACCOUNTED FOR THE MOST COMMON REASON IN CHILDHOOD					HAD DETERIORATED TO THESE SCORES WITHIN 48 HOURS OF IMPACT WERE ELIGIBLE FOR THE PRESENT STUDY			REQUEST	WERE IN THE GROUP OF PATIENTS WHO "TALKED AND DETERIORATED" THE MORTALITY FOR PAEDIATRIC PATIENTS WAS SIGNIFICANTLY LOWER THAN FOR ADULT AND ELDERLY PATIENTS HAVING THE SAME GCS SCORE (P<0.01) AND AS SUPPOSED; LOWER WITH HIGHER GCS SCORES ONLY 2% OF THE PATIENTS WITH		

											DIFFUSE HEAD INJURY HAD UNEQUAL PUPILS (P < 0.001). MULTIVARIATE ANALYSIS USING THE LOGISTIC REGRESSION MODEL REVEALED SUBARACHNOID HAEMORRHAGE AS THE ONLY INDEPENDENT SIGNIFICANT RISK FACTOR IN PREDICTING MORTALITY WITH A SENSITIVITY OF 42% AND SPECIFICITY OF 95%		

3.	DUARTE 2005	Y	Y	Y	C	Y	C/N	y	Y	C	FOUR OF THE PATIENTS WITH MENINGITIS DIED (8.7 PER CENT), COMPARED TO 31 OUT OF THE 88 (35.2 PER CENT) WITH SEPTICAEMIA AND MENINGITIS AND 18 OF THE 29 (62.1 PER CENT) WITH SEPTICAEMIA ALONE (P_0.001). SYMPTOMS _24 H (AOR 3.8, 95 PER CENT CI 1.1–13.1), PLATELET COUNT _100 000MM3 (AOR 13.8, 95 PER CENT CI 3.1–60.9) AND ACIDOSIS (AOR 6.0, 95 PER CENT	Y	Good quality

											CI 1.7–21) WERE THE SIGNIFICANT RISK FACTORS FOR DEATH SEPTICAEMIA COMPLICATES THE OUTCOMES FOR MENINGITIS IN CHILDREN IN THIS POPULATION		
4.	ERKHAN 2004	EIGHTY-TWO CHILDREN WERE REFERRED, BUT ONLY 17 (20.7%) REQUIRED SURGICAL INTERVENTION (15 OF THESE 17 FOR APPENDICITIS).	TRANSFERRED TO SURGERY	Y	Y	Y	Y ADMISSION QUESTIONNAIRE	Y	Y AGE GENDER	N LOST 28 NO FURTHER DETAILS	THE FIVE MOST PREVALENT DIAGNOSES WERE: (I) UPPER RESPIRATORY TRACT INFECTION AND/OR COMPLICATED WITH OTITIS MEDIA OR SINUSITIS (23.7%); (II) ABDOMINAL	Y	Good quality

		THE MEAN OF WBC COUNTS WAS 17 010/MM IN PATIENTS WHO REQUIRED A SURGICAL OPERATION (13 PATIENTS) AND 11 780/MM 3 IN THE REMAINDER (P< 0.05). SURGICAL CAUSES (ACUTE APPENDICITIS) WERE MORE	HOSPITALIZED IN ED INPATIENT ADMISSION DISCHARGED HOME								PAIN WITH UNCERTAIN ETIOLOGY (15.4%); (III)GASTROENTERITIS (15.4%); (IV) CONSTIPATION (9.4%); AND (V) URINARY TRACT INFECTION (8%).		

		FREQUENT IN THE OLDER AGE GROUP COMPARED WITH THE YOUNGER AGE GROUP (FISHER'S EXACT TEST,P= 0.0001). IN TOTAL, 17 PATIENTS WERE HOSPITALIZED IN THE DEPARTMENT OF PEDIATRIC EMERGENCY UNIT AND 17 WERE											

		HOSPITALIZED IN THE DEPARTMENT OF PEDIATRIC SURGERY. 76 PATIENTS (OF 399; 19%) RETURNED HOME BECAUSE NO CAUSE FOR THE ABDOMINAL PAIN WAS DETECTED. IN 19 OF THESE PATIENTS, THE PROGRESS WAS NOT OBTAINED.											

		THE COMPLAINTS OF 57 PATIENTS (OF 371; 15.4%) WITH UNCERTAIN ETIOLOGY WERE RESOLVED WITHIN 2 DAYS. 11 PATIENTS RETURNED WITHIN 10 DAYS FOR RE-EVALUATION, BUT THE INITIAL DIAGNOSIS DID NOT CHANGE											

5.	IDRO AND ALOYO 2004	The total inpatient mortality was 3.1%. Of the 23 cases of death, 5 (21.7%) occurred within 1 hour of arrival to hospital. A total of 17 deaths (73.9%) occurred in the emergency room and the remaining soon after transfer to	MORTALITY	Y	Y	Y ON ADMISSION WHO CRITERIA FOR SEVERITY	Y ASSESSMENT OF QUALITY OF CARE RECEIVED	Y	Y TIME OF DAY SEEN BY DR	Y	The commonest defining manifestations were severe anaemia (39.4%), respiratory distress (17.1%), multiple generalized convulsions (13.3%), hypoglycaemia (11.4%) and cerebral malaria (7.2%).	Y	Good quality

		the main Paediatric wards but all within 24 hours. Cerebral malaria accounted for47% of these deaths. . Caretaker satisfaction was predictive of mortality in the unit. Only 22.5% of the children were brought at night. Children												

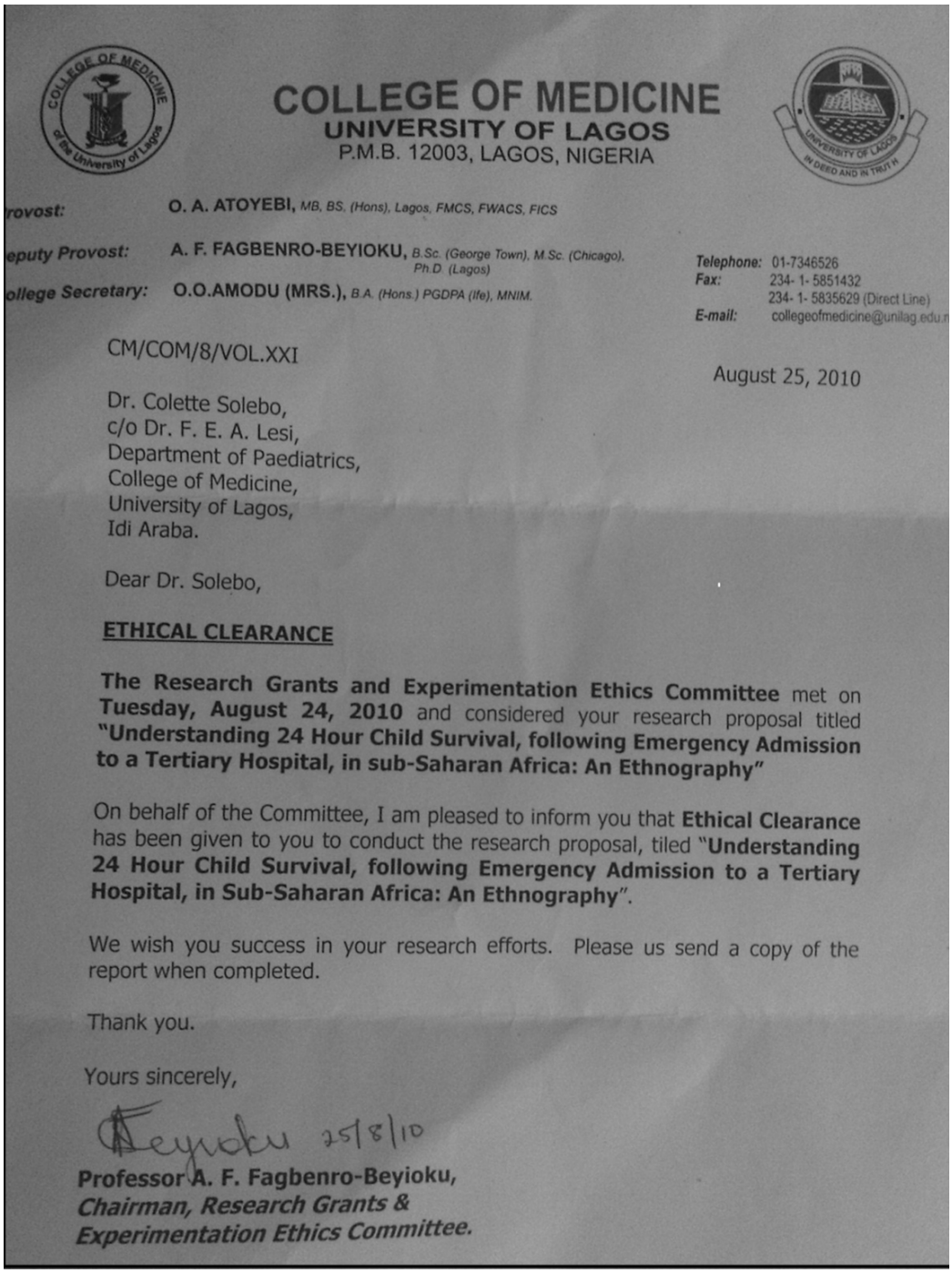
		brought at night took a shorter time before being seen by a doctor (1.9 SD 2.4 vs 2.5 SD 2.0 hours, p=0.002), received the first dose of quinine earlier (4.1 SD 3.2 vs 5.2 SD 3.2 hours, p<0.0001),												

TRIAL DESIGN												
					CORE QUESTIONS							
	AUTHOR/ YEAR	**SUMMARY OF RESULTS: MAIN STUDY OUTCOMES**	**ADDRESSES CLEARLY FOCUSED ISSUE**	**WAS THIS AN RCT**	**APPROPRIATE ALLOCATION TO INTERVENTION AND CONTROL GROUPS?**	**PARTICIPANTS, STAFF AND STUDY PERSONNEL 'BLIND' TO PARTICIPANTS' STUDY GROUP**	**ALL OF THE PARTICIPANTS TRIAL ACCOUNTED FOR AT ITS CONCLUSION**	**SUFFICIENT SAMPLE SIZE ?POWER CALC**	**ALL GROUPS FOLLOWED UP AND DATA COLLECTED IN THE SAME WAY**	**MAIN RESULT**	**INTENTION TO TREAT ANALYSIS**	**CAN THE RESULTS CAN BE APPLIED**
1.	NAMUTANGALA 2008	Time to regain consciousness (p = 0.11), sit unsupported (p = 0.81), time to start oral intake (p = 0.13) and total coma duration (p = 0.07) were similar in both groups. There was no significant	Y	Y	Y	Y DOUBLE BLIND	Y	Y A sample size of 78 patients in each group for 90% power and 95% confidence interval was calculated,	Y		Y	Y

		difference in the mortality between the placebo (13/80 or 16.3%) and mannitol (10/76 or 13.2%) groups: RR = 1.2 (CI 0.5–2.7). No adverse effects were observed after administration of mannitol										

APPENDIX C

Section 1: Ethical Approval from the College of Medicine, Lagos Nigeria



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CM/COM/8/VOL.XXI

August 25, 2010

Dr. Colette Solebo,
c/o Dr. F. E. A. Lesi,
Department of Paediatrics,
College of Medicine,
University of Lagos,
Idi Araba.

Dear Dr. Solebo,

ETHICAL CLEARANCE

The Research Grants and Experimentation Ethics Committee met on **Tuesday, August 24, 2010** and considered your research proposal titled **"Understanding 24 Hour Child Survival, following Emergency Admission to a Tertiary Hospital, in sub-Saharan Africa: An Ethnography"**

On behalf of the Committee, I am pleased to inform you that **Ethical Clearance** has been given to you to conduct the research proposal, tiled **"Understanding 24 Hour Child Survival, following Emergency Admission to a Tertiary Hospital, in Sub-Saharan Africa: An Ethnography"**.

We wish you success in your research efforts. Please us send a copy of the report when completed.

Thank you.

Yours sincerely,

Beyioku 25/8/10

Professor A. F. Fagbenro-Beyioku,
Chairman, Research Grants & Experimentation Ethics Committee.

Section 2: Ethical Approval Letter from Warwick Biomedical Committee

13 July 2010

Dr Colette Solebo
Room A039
Warwick Medical School,
University of Warwick
Coventry
CV4 7 AL

Dear Colette

Understanding Factors associated with 24 hour child survival following emergency admission to hospital in Lagos, Nigeria

Thank you for submitting your revisions for the above-named project to the University of Warwick Biomedical Research Ethics Sub-Committee for Chair's Approval.

I am pleased to confirm that the revised documentation meets the required standard which means that full approval is granted and your study may commence.

I take this opportunity to wish you success with the study and to remind you any substantial amendments require prior approval from the Committee. The Committee would also welcome an End of Project Report.

Yours sincerely

Jane Barlow
Chair
Biomedical Research
Ethics Sub-Committee

Copy:
Frances Griffiths and Peter Sidebotham, Academic Supervisors

Section 3: Focus Group Question Guide

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1. **Welcome: Introduction of moderator and assistant- registration of intent to begin audio-record**
2. **Introductions -Introductions all round-who are you how long worked at CHER total. 5mins**
3. **Consent**
4. **Our topic: The main topic is "*what affects the outcome of children in their first 24 hrs in CHER?"***
   The results will be used +nl source of info- well rounded view
   You were selected because—worked in CHER w 6m exp
   You represent for us our panel of experts
5. **Ground rules/Guidelines: No right or wrong answers, we are recording, first name basis, please listen as others speak don't speak over, no side talk please, we are all here to learn, no cell phones please they disrupt the recording equipment**

---

1. Opening Question- Ice breaker (Encourage cohesion.) 5 minutes

- *What premiership teams do you support?*

Messi vs Ronaldo

Sambo vs Jonathan

What do you think of the Ipad

(This allows for latecomers to arrive and settle down. Once we finish taking answers to this no further entries allowed) 5 minutes

2. Discussion starter—(*easy to respond to, and everyone should have something to say about it. Everybody write down something burning about this*).- 10 minutes

Could you please each, write down from the last shift you worked in CHER.

The types of things you remember <u>seeing happen</u> to the children who were in CHER, while they were in CHER

(This is about outcomes e.g. admitted, referred, transferred, died, had surgery DAMA)

Probes- what involvement did you have in this case
Are you aware of what happened to any of them after they left.

3. Question 1 15 minutes

From your experience of working at CHER, what affects these outcomes?

Take them individually now

Why?

What solutions might there be?

4. Question 2 15 minutes each

Looking back to when you started in CHER what has changed for children brought to CHER?

Are these changes all positive? Depends on responses here C

Why?

Is anything still missing?/Are there still any changes that could be made?

REFRESHMENTS AFTER QUESTION 4

5. Question 3 15 minutes

Focusing again on Children, could you reflect back to a real case with an adverse outcome that stands out in your memory where the diagnoses was probably not the main factor which caused the outcome.

You can take a minute to reflect on this, and please do not mention details of the case, ie. name of the child or the parents, or the month of admission.

What happened to the child, parents?

6. **Question 5 15 minutes**

You are made Minister of Health, today- faced with reducing the mortality rates in CHER (currently ? ask)
(Write down answers here Honorables!)
what is the first decision would you make to improve the outcomes in CHER.
How long do you think it would take to start seeing a reduction in the mortality?
How quickly do you think you could implement this decision?
Any other decisions you would make?

How low do you think the rates could go?

7. "Somebody has said something you must respond to!" 3 minutes

8. What did we miss? 3 minutes

9. One last piece of advice for researcher and study 3 minutes

Section 4: Question Framework used During

Unstructured Interviews - From Field Notes

1. History of index illness
2. Why LUTH
3. Past Medical History
4. Antenatal events, relevant?
5. Immunization
6. Nutrition
7. Birth and Delivery
8. Previous medical treatment in this illness
9. Family and social history-home, family structure, water supply, parental employment

Section 5: Participant Information Documents

Consent Form

Study Title: ***Understanding early in-hospital child survival following emergency paediatric admissions to the Lagos University Teaching Hospital (LUTH): an ethnography***

Participant Identification Number:

Name of Researcher: Please initial box

1. I confirm that I have read and understand the information sheet dated..... for the above titled study.

I have had sufficient opportunity to consider the information available on the purpose and nature of the research, possible benefits and risks of my participation, to ask questions and have had these answered satisfactorily.

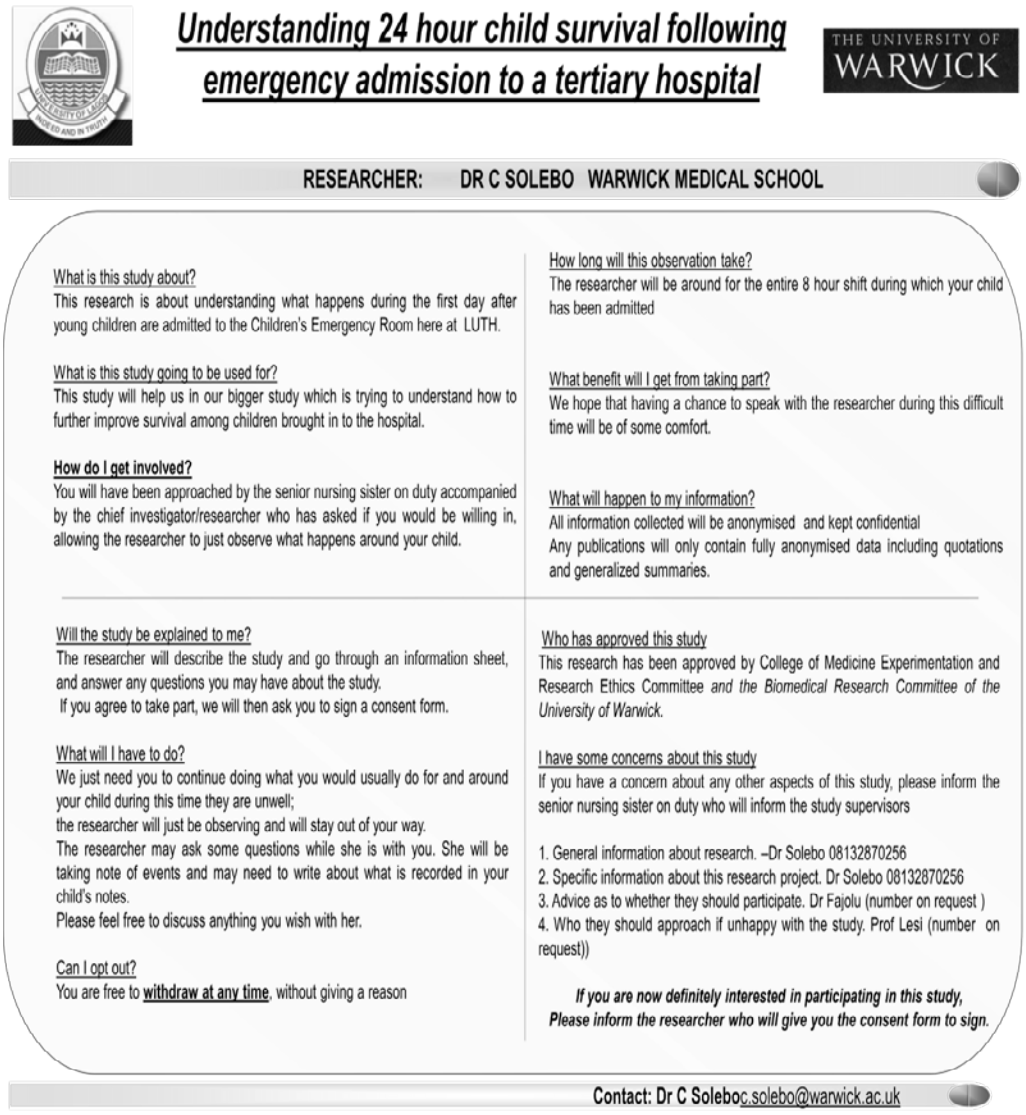
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.

3. I understand that anonymised data collected during the study, may be looked at by individuals from University of Warwick, and Lagos University Teaching Hospital, where it is relevant to my contribution to this research. I give permission for these individuals to have access to these data.

4. I freely agree to take part in the above study.

Initials of Participant	Name of Person taking consent
Date	Date
Signature	Signature

Information Leaflet Used During Lagos Fieldwork



Understanding 24 hour child survival following emergency admission to a tertiary hospital

THE UNIVERSITY OF WARWICK

RESEARCHER: DR C SOLEBO WARWICK MEDICAL SCHOOL

What is this study about?
This research is about understanding what happens during the first day after young children are admitted to the Children's Emergency Room here at LUTH.

What is this study going to be used for?
This study will help us in our bigger study which is trying to understand how to further improve survival among children brought in to the hospital.

How do I get involved?
You will have been approached by the senior nursing sister on duty accompanied by the chief investigator/researcher who has asked if you would be willing in, allowing the researcher to just observe what happens around your child.

How long will this observation take?
The researcher will be around for the entire 8 hour shift during which your child has been admitted

What benefit will I get from taking part?
We hope that having a chance to speak with the researcher during this difficult time will be of some comfort.

What will happen to my information?
All information collected will be anonymised and kept confidential
Any publications will only contain fully anonymised data including quotations and generalized summaries.

Will the study be explained to me?
The researcher will describe the study and go through an information sheet, and answer any questions you may have about the study.
If you agree to take part, we will then ask you to sign a consent form.

What will I have to do?
We just need you to continue doing what you would usually do for and around your child during this time they are unwell;
the researcher will just be observing and will stay out of your way.
The researcher may ask some questions while she is with you. She will be taking note of events and may need to write about what is recorded in your child's notes.
Please feel free to discuss anything you wish with her.

Can I opt out?
You are free to **withdraw at any time**, without giving a reason

Who has approved this study
This research has been approved by College of Medicine Experimentation and Research Ethics Committee *and the Biomedical Research Committee of the University of Warwick.*

I have some concerns about this study
If you have a concern about any other aspects of this study, please inform the senior nursing sister on duty who will inform the study supervisors

1. General information about research. –Dr Solebo 08132870256
2. Specific information about this research project. Dr Solebo 08132870256
3. Advice as to whether they should participate. Dr Fajolu (number on request)
4. Who they should approach if unhappy with the study. Prof Lesi (number on request))

If you are now definitely interested in participating in this study, Please inform the researcher who will give you the consent form to sign.

Contact: Dr C Soleboc.solebo@warwick.ac.uk

Parent Participant Information Sheet

Study Title: ***Understanding early in-hospital child survival following emergency paediatric admissions to the Lagos University Teaching Hospital (LUTH): an ethnography.***

What is this study about?
This research is about understanding what happens during the first day after young children are admitted to the Children's Emergency Room of the Lagos University Teaching Hospital LUTH. The study will explore how children, parents and the hospital staff interact within the health facilities in Lagos.

What is this study going to be used for?
The information we get from this study about how your children, you as parents and the hospital staff interact within the health facilities in Lagos can to help us in our bigger study understand how to further improve survival among children brought in to the hospital.

How do I get involved?
You will have been approached by the consultant on duty accompanied by Dr Colette Solebo, who asked if you would be willing in participating in a study,

Will the study be explained to me?
The researcher will describe the study and go through this information sheet, after which you may decide whether or not to join the study. If you agree to take part, we will then ask you to sign a consent form.

What will I have to do?
We just need you to continue doing your normal parental duties around your child; the researcher will just be observing and will largely stay out of your way. From time to time the researcher may ask some questions while she is with you. She will be taking note of events and may need to write about what is recorded in your child's notes.
Please feel free to discuss anything you wish with her.

Can I opt out?
You are free to withdraw at any time, without giving a reason. It is our desire that your participation provides you with a positive experience and equips you with valuable interaction and information.

How long will this observation take?
The researcher will be around for the entire 8 hour shift during which your child has been admitted and will return before the end of your first 24 hours to review what has gone on while she was gone.

What benefit will I get from taking part?
Although we understand the experience of being in hospital is a distressing one for you as parents, we hope that having a chance to speak with the researcher during this difficult time will be of some comfort.

I have spoken to the researcher, but now I want to opt out, how do I do this?
If at any time you feel you cannot for any reason continue to participate in the study, please inform the researcher directly, her contact details will be available for the entire period of the study at the emergency room. At this time all your data will be removed from the study.
You are fully within your rights to end your participation in this way.

What will happen to <u>my</u> information?
Most information that can be used to identify you such as your name and address will not be collected by the researcher. She will collect your child's hospital number and gender and age, but these will be in the field notebook which will always be in her care or locked securely in the filing cabinet in the study offices. These field notes will be coded using a study identification number unique to you and all observations about you will be recorded in this anonymous format for the rest of the study and all observations about you and your family will be recorded in this anonymous format for the rest of the study. Anonymised versions of data will be provided to the Supervision team at Warwick University UK, to allow for quality checks to be carried out on the study. Although the information sent to the UK will be anonymised, the use of the secure Warwick Files Server will further ensure the confidentiality of all data from this study.

The results of this study will form the basis of the educational project of the researcher and following submission may be published in whole or in part.
The final results of the study will be made available to the Department of Paediatrics and the Library of the Lagos University Teaching Hospital, in form of summary reports, the completed thesis and any publications resulting from the research.

Any publications will only contain fully anonymised data including quotations and generalized summaries.

Who is sponsoring this project?
This research is sponsored by the University of Warwick; the sponsors of this study will not be paying CHER LUTH for your participation in this study. Neither will the researcher be receiving any monetary compensation which will result in a conflict of interest for her.

This research has been looked at by an independent group of people, a Research Ethics Committee, to protect your interests, and has been reviewed and given favorable opinion by two such committees:

1. The Research Grants and Experimentation Ethics committee of the College of Medicine Lagos, Nigeria

2. The Biomedical Research Committee of the University of Warwick.

I have some concerns about this study/ I want to complain about the researcher
If you have a concern about any other aspects of this study, you should ask to speak to any one of us on the research team, and we will do our best to answer your questions. Our contact number is 08071845066. Any genuine complaints about your interaction with our researcher during the course of the study, or any possible harm you might suffer will be addressed appropriately.

This research will adhere strictly to ethical practice and all information about you will be handled in confidence.

If you are now definitely interested in participating in this study,
Please inform the researcher who will give you the consent form to sign.

1. General information about research. –Dr Solebo 08071845066
2. Specific information about this research project. Dr Solebo 08071845066
3. Advice as to whether they should participate. Dr Fajolu (number to be provided)
4. Who they should approach if unhappy with the study. Prof Lesi (number to be provided)

Health Professional Participant Information Sheet

Study Title: ***Understanding early in-hospital child survival following emergency paediatric admissions to the Lagos University Teaching Hospital (LUTH): an ethnography.***

What is this study about?
This research is about understanding what happens during the first day after young children are admitted to the Children's Emergency Room of the Lagos University Teaching Hospital LUTH. The study will explore how children, parents and the hospital staff interact within the health facilities in Lagos.

What is this study going to be used for?
The information we get from this study about how children, you as hospital staff, patients and parents interact within the health facilities in Lagos, will help us in our bigger study understand how to further improve survival among children brought in to the hospital.

How do I get involved?
You will have been informed by the Consultant in charge of the emergency room of a series of focus groups available and about the opportunity they present for your continuing professional development.

Will the study be explained to me?
The researcher will be available, at least every other day in the children's emergency room (for 12 weeks) to describe the study and go through this information sheet, after which you may decide whether or not to join the study. If you agree to take part, we will then ask you to sign a consent form.

What will I have to do?
We would like for you to join in the interactive sessions which will involve group discussions about working in the children's emergency room, the different events both planned and unplanned that happen, and what happens to the children and families who come into the hospital. These workshops will be audio recorded.

Can I opt out?
You are free to withdraw at any time, without giving a reason. It is our desire that your participation provides you with a positive experience and equips you with valuable interaction and information.

How long will this learning workshop take?
These workshop sessions are designed to last between 45minutes to one hour.

What benefit will I get from taking part?
These workshops will provide an opportunity to see what other professionals have to say about their observations in the emergency room, and identify common areas and

unusual areas of concern. By participating you will be contributing to a greater understanding of how to improve child survival in emergency admissions.

I have attended the workshops, but now I want to opt out, how do I do this?
If at any time you feel you cannot for any reason continue to participate in the study, please inform the researcher directly, her contact details will be available for the entire period of the study at the emergency room. At this time all your data will be removed from the study.
You are fully within your rights to end your participation in this way.

What will happen to <u>my</u> information?
Most information that can be used to identify you such as your name and address will not be collected by the researcher. Your grade and gender will be collected, but these will be in the field notebook which will always be in her care or locked securely in the filing cabinet in the study offices. These field notes will be coded using a study identification number unique to you and all observations about you will be recorded in this anonymous format for the rest of the study. The transcripts of these sessions will be transcribed by the researcher who will ensure complete anonymization of responses and comments. Anonymized versions of data will be provided to the Supervision team at Warwick University UK, to allow for quality checks to be carried out on the study. Although the information sent to the UK will be anonymized, the use of the secure Warwick Files Server will further ensure the confidentiality of all data from this study.

The results of this study will form the basis of the educational project of the researcher and following submission may be published in whole or in part.
The final results of the study will be made available to the Department of Pediatrics and the Library of the Lagos University Teaching Hospital, in form of summary reports, the completed thesis and any publications resulting from the research.
Any publications will only contain fully anonymised data including quotations and generalized summaries.

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If you have a concern about any other aspects of this study, you should ask to speak to any one of us on the research team, and we will do our best to answer your questions. Our contact number is 08071845066. Any genuine complaints about your interaction with our researcher during the course of the study, or any possible harm you might suffer will be addressed appropriately.

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2. Specific information about this research project. Dr Solebo 08071845066
3. Advice as to whether they should participate. Dr Fajolu (number to be provided)
4. Who they should approach if unhappy with the study. Prof Lesi (number to be provided)

SECTION 6: CODES FROM QUALITATIVE ANALYSIS OF OBSERVATION/INTERVIEW DATA

Name	Sources	References
Absent doctors	1	1
Acceptance of the research	14	53
Advice for families Nurses	1	1
Altercations with parents	5	12
Amenities eg power and water oxygen and other hardware	7	22
Antenatal and delivery histories	7	16
Appointment with principal officers CHER	1	4
Background noises or smells or temperature	8	18
Background story of deceased child	4	6
Background story of child ill	11	21
Bereavement	1	1
BID or brought in dead	1	1
Cases brought to emergent attention	9	13
Chairtable donations-- recode	1	1
CHER Consultant movements decisions opinions activities	3	7
CHER guidelines	1	2
CHER process recode	12	52
CHER staff details	4	6
Children in consulting room	9	32
Children in waiting area	3	11
Children on admission descriptions	7	15
CLinical procedures	10	17
Chief Nursing Officer duties movements	9	38
Communication to other parts of the hospital	3	7
Consulting room	9	13
Delays in process	6	6
Description of old location	1	2
Difficulty accessing LUTH	2	3
Discussions about hospital management among staff	3	6
Disruption to normql caused by the move	1	1
Drug Reps	1	1
Elective medical students	2	6
Equipment	4	6
External CLinical staff on consults	4	5
External PEd CLinical Staff	3	12
External Staff in CHER Worrying about their friends or family who are patients	3	7
Government response to patient care in public hospitals	4	6
HAndover ward round	4	11
HOD role in CHER	3	7
Home histories	8	21
Home remedies and self med	11	21
House Officers movements activities decisions	11	26
Immunization history	5	7
Impermanent new location	2	3
In the waiting area	12	25
Interpatient interactions	6	10

Interrelative interaction	9	18
Interstaff interactions	13	49
Janitorial staff	5	8
Laboratory	2	3
Lagos State and other Public Hospitals note	3	5
Layout of the building	4	17
LUTH local politics	1	2
MAin reason child is in CHER	13	55
Maintenance staff	4	6
Management visit	3	6
Medical Officer activities decisions movements	9	88
Medical Student responses to bereavement	3	4
Medical students	6	15
Miscommuniation between staff and patients	7	13
Miscommunication among staff	2	3
New location	5	8
No space for patients	11	42
Nurses movements decisions descriptions	10	31
Nurses station	4	7
Nurses treatment room	1	1
Nutrition histories	5	8
Orderlies	2	4
Other patients response to bereavement	1	5
Other researcher	2	2
Pace of work recode	2	5
Parent child interaction	10	27
Parent observation of clinical status	9	14
parent occupations	7	14
Parent on admission description	8	25
Parents dress	15	46
Parents opinions about staff recode	1	6
Parents response to bereavement	2	18
Patient Area of Residence	5	6
Patient outcomes	11	48
Patients readiness for admission	6	9
Patients relatives and CHER process	8	20
Patients relatives getting restive	10	21
Patients response to given advice	11	26
Patients who have staff friends used for help	2	6
Payments	8	15
Pharmacists movements decisions etc	2	3
Pharmacy	5	6
Positioning for observing and selection of subjects and writing notes	14	45
Post strike	1	1
PRevious medical treatment	6	18
Private hospitals	13	25
Problem with new location	1	2
Procedure room	2	2
Reason for attending LUTH	8	17
Records Department	1	7
referral letters	7	11
Registrars movements decisions activities	10	30

Relatives in the space outside CHER	3	7
Relatives moving around	10	15
Relatives taking a deceased child home	2	6
Religion recode	1	1
Responses to the researcher personally	8	13
Security staff	9	17
Senior registrar movements activities decisions	11	65
Staff AS Relative or patients parent	4	8
Staff Opinions on barriers to better survival	4	6
Staff relative interaction in bereavement	4	13
Staff relative or parent interaction generally	15	112
Staff response to bereavement	3	10
Staff rest breaks	3	7
Strike action involving LUTH	2	19
Support from collaborators	5	13
The Lagos Doctor's Strike	10	22
Triage	4	11
Triage outcomes	2	2
Use of space for patients	4	10
Waiting times	4	5

APPENDIX D

Table 1: Age gender and disposition of 18 children whose parents were also interviewed

Vignette number chronological	Field note nicknames	Age	Gender	Working Diagnoses	Antenatal care (ANC)	Birth	HOME Local Government Area (LGA)	Immunization	Nutrition	Toilets	Water	Outcome of Child's Contact with CHER at 24-hours
1	"AZ baby"	Neonate	Male	Severe Birth Asphyxia	ANC private	Spontaneous Vaginal Delivery (SVD) Private Hospital	BADAGRY	Bacillus Calmette–Guérin (BCG) up to date for age) scar visible	Breast milk	Water Closets (WC)	Well	Admitted to CHER
2	"CC Baby "	3m	Female	Acute Respiratory Infection (ARI)/?Malaria/Sepsis	ANC private	SVD Private Hospital	IKORODU	RTH card-up to date	Breast milk and weaned to bottle feeding @3months	WC	Borehole	Admitted to CHER
3	"DKI"*	5m	Male	Gastroenteritis/Malaria/Febrile convulsions	ANC public	SVD Military Hospital	OJO	All but measles-due@9m	Bottle fed from first month	WC	Tanker	Admitted to CHER
4	"KSMB"	8m	Male	Anaemia/Sepsis/ARI	No ANC	At home Traditional Birth Attendant (TBA)	OUTSIDE LAGOS	No history	Breastfed and pap	Pit Latrine	Well	Admitted to CHER
5	KLA	9m	Female	?Malaria/ARI/Gastroenteritis	ANC public	At French Village Hospital	BADAGRY	Reported up to date	Breastfed weaned water at 6months	WC	Bottled water	Admitted to CHER

6	**"SMTCK"***	**1y 4m**	**Male**	**Neck Abscess**	**ANC private**	**At Private hospital**	**SURULERE**	**n/a**	**Weaned at 3months**	**WC**	**Borehole** **Bottled water**	**Admitted to CHER**
7	**"L WDM*"**	**5m**	**Male**	**ARI? Malaria** **Sepsis**	**No ANC**	**At home TBA**	**IBEJU LEKKI**	**Not up to date**	**Breast milk and water from birth**	**None available**	**"Pure water"**	**Admitted to CHER**
8	**"DM' baby"**	**6m**	**Female**	**Gastrointestinal Obstruction**	**TBA ANC**	**At home TBA**	**OUTSIDE LAGOS**	**Reported up to date**	**Weaned at 2months**	**None available**	**Well**	**DAMA**
9	**"SJB"**	**5y**	**Male**	**SJS**	**ANC Public**	**SVD at Public hospital**	**LAGOS ISLAND**	**Reported as fully immunized**	**Bottle fed from birth Weaned @ 4months**	**WC**	**Borehole** **Well**	**Died within 24 hours- Transferred to the wards**
10	**"BKR baby"***	**5 weeks**	**Male**	**Sepsis/ARI**	**ANC private**	**At private hospital**	**APAPA**	**Up to date Road to Health (RTH) card**	**Breast milk and water weaned 3months**	**WC**	**"Pure water"** **Well water**	**Died**
11	**"Child who died in the bay"**	**5 months**	**Male**	**Sepsis/? Malaria**	**No ANC**	**At private hospital**	**AGEGE**	**Reported as Not up to date**	**Breast milk and water weaned at 1.5months**	**WC**	**"Pure water"**	**Died**
12	**"FSH baby"***	**5days**	**Female**	**Neonatal Jaundice**	**ANC private**	**Caesarean section at private hospital**	**LAGOS ISLAND**	**Up to date RTH card (BCG only)**	**Breast milk exclusively**	**WC**	**"Pure water"** **Borehole**	**Discharged Home**
13	**"PH Baby"**	**4m**	**Male**	**Diphtheria**	**No ANC**	**TBA at home SVD**	**OUTSIDE LAGOS**	**BCG only**	**Breast milk and water from birth**	**Pit Latrine**	**Well water**	**Discharged Home**
14	**"BTG**	**11y**	**Female**	**Seizures/Tetanus**	**ANC private**	**SVD at Private hospital**	**LAGOS MAINL**	**Reported as up to date**	**Weaned@6months**	**WC**	**Borehole**	**Referred to other hospital**

							AND					
15	**"HBB"**	**4m**	**Male**	**Intussusception**	**ANC private**	**SVD at Private hospital**	**IKORO DU**	**RTH card – fully immunized**	**Breast milk and water and pap**	**WC**	**Borehole**	**To other Unit**
16	**"A. Prz"***	**5 weeks**	**Male**	**ARI/FTT/ Sepsis**	**No ANC**	**SVD at private hospital;**	**AGEGE**	**BCG OPV0**	**Breastfed "exclusively" reported**	**WC**	**"Pure water"**	**Transferred to the wards**
17	**"Blue lace girl"**	**4y**	**Female**	**Burns**	**ANC private**	**SVD at Private hospital**	**APAPA**	**RTH fully immunized**	**Weaned @9months**	**WC**	**Borehole**	**Transferred to the wards**
18	**"J WZM"**	**7m**	**Male**	**Seizures/Meningitis**	**ANC private**	**Triplets at hospital by Caesarean Section**	**MUSHIN**	**RTH fully immunized**	**Breast milk pap and water from birth**	**WC**	**Borehole**	**Transferred to the wards**

Table 2 List of the 99 Individual Children Observed During Fieldwork

	Name	Final publication name	Age	Gender	Outcome of Child's Contact with CHER	Working Diagnoses
1.	2y convulsion	2y convulsion	2y	Male	Admitted to CHER	Meningitis to rule out epilepsy
2.	ACOL	ACOL	2y	Male	Admitted to CHER	n/a
3.	Azubuike baby	Az- baby	Neonate	Female	Admitted to CHER	Severe Birth Ashpyxia
4.	Barely breathing baby	Barely breathing baby	Neonate	Male	Admitted to CHER	Severe Birth Ashpyxia (SBA)
5.	Burns Boy 2	Burns Boy 2	2y	Male	Admitted to CHER	Burns
6.	Child needing an I and D	Child needing an I and D	1y	Male	Admitted to CHER	Abscess
7.	Coughing chubby	CC Baby	3m	Female	Admitted to CHER	Acute Respiratory Infection (ARI) I/?Malaria/Sepsis
8.	David Ik	DKI	5m	Male	Admitted to CHER	Gastroenteritis/Malaria
9.	Gastrochesis-irate parents	Gastrochesis-irate parents	1y	Female	Admitted to CHER	Gastroschesis
10.	Grandmas baby	Grandmas baby	4m	Female	Admitted to CHER	Malaria and Vomiting
11.	Green lace Sickler	Green lace Sickler	7y	Male	Admitted to CHER	Sickling Crises
12.	HbSS Rejected	HbSS Rejected	11	Female	Admitted to CHER	Sickling Crises

13.	IV Fluid Boy2	IV Fluid Boy2	8y	Male	Admitted to CHER	n/a
14.	IV FLuid girl	IV FLuid girl	7y	Male	Admitted to CHER	Malaria
15.	IV line baby	IV line baby	6m	female	Admitted to CHER	n/a
16.	Jumoke hospital baby	Jumoke hospital baby	Neonate	Male	Admitted to CHER	Neonatal Jaundice (NNJ)
17.	Kasiemobi	KSMB	8m	Male	Admitted to CHER	Sepsis/ARI
18.	Kemisola french village	KLA	9m	Female	Admitted to CHER	Malaria/Gastroenteritis
19.	Khaki5 boy	Khaki5 boy	5y	Male	Admitted to CHER	Meningitis
20.	LP Baby	LP Baby	6m	Male	Admitted to CHER	Meningitis
21.	Male 6 losing neck	Male 6 losing neck	6m	Male	Admitted to CHER	Rule out Acute flaccid paralysis
22.	New hydrocephalus	New hydrocephalus	7m	Male	Admitted to CHER	Hydrocephalus
23.	Red T and Khaki	Red T and Khaki	8y	Male	Admitted to CHER	Acute Urinary tract infection (UTI)
24.	Room kid 2	Room kid 2	2y	Female	Admitted to CHER	n/a
25.	Sling Baby yellow and white	Sling Baby yellow and white	4m	Female	Admitted to CHER	ARI
26.	Somtochukwu	SMTCK	1y 4m	Male	Admitted to CHER	Neck Abscess
27.	Trad boy 10	Trad boy 10	10y	Male	Admitted to CHER	n/a
28.	Ugo's neice	Ugo's neice	7m	Female	Admitted to CHER	ARI
29.	Yet another male neonate	Yet another male neonate	Neonate	Male	Admitted to CHER	Sepsis, rule out Meningitis

30.	Room 3 kid	Room 3 kid	3y	Male	Admitted to CHER	Malaria
31.	BID 1	BID 1	Neonate	Female	BID	Neonatal Jaundice
32.	Doris Madueke dghtr	D M.. dghtr	6m	Female	DAMA	Gastro-intestinal Obstruction
33.	Bakare baby	BKR baby	5weeks -(1m)	Male	Died	Sepsis/ARI
34.	Child who died in the bay	Child who died in the bay	5months	Male	Died	Sepsis
35.	Jaundiced child emerg	Jaundiced child emerg	Neonate	Male	Died	Neonatal Jaundice
36.	Jibril	Jtb	4y	Male	Admitted to CHER	Sepsis
37.	3yr old stripes	3yr old stripes	3	Male	Discharged Home	Gastroenteritis
38.	Adire Sling baby	Adire Sling baby	8m	Female	Discharged Home	n/a
39.	Asthma Boy 9	Asthma Boy 9	9y	Male	Discharged Home	Acute asthma
40.	Aymd	Aymd	4	Male	Discharged Home	Laceration
41.	Cele girl 2	Cele girl 2	3m	Female	Discharged Home	UTI
42.	Cheeky Monkey	Cheeky Monkey	4	Male	Discharged Home	Malaria
43.	Coughy boy (bro)	Coughy boy (bro)	2y	Female	Discharged Home	ARI/Malaria
44.	Coughy girl (sis)	Coughy girl (sis)	2y	Female	Discharged Home	ARI/Malaria
45.	Cream ruffles child	Cream ruffles child	2y	Female	Discharged Home	ARI
46.	Denim boy	Denim boy	2y	Male	Discharged Home	Malaria

47.	Dr O's baby	Dr O's baby	6m	Male	Discharged Home	Malaria; teething
48.	Fashola baby	FSH baby	Neonate	Female	Discharged Home	Neonatal Jaundice
49.	Female baby in waiting room	Female baby in waiting room	4m	Female	Discharged Home	ARI
50.	Fever neonate 2 week	Fever neonate 2 week	Neonate	Female	Discharged Home	Malaria
51.	L Wisd*	L WDM*	5m	Male	Discharged Home	ARI/Malaria/Sepsis
52.	Mushin girl 2	Mushin girl 2	2y	Female	Discharged Home	Sickling crises
53.	Patterned Blue and White girl	Patterned Blue and White girl	9m	Female	Discharged Home	ARI
54.	Port Harcourt Baby	PH Baby	4m	Male	Discharged Home	Diphtheria
55.	Striped Polo Boy	Striped Polo Boy	7	Male	Discharged Home	ARI
56.	Tall girl in blue	Tall girl in blue	10y	Female	Discharged Home	Malaria/Anaemia
57.	Tourniquetboy	Tourniquetboy	3y	Male	Discharged Home	n/a
58.	White dress girl	White dress girl	2y	Female	Discharged Home	ARI
59.	Colorful girl	Colorful girl	3	Female	Referred to other hospital	n/a
60.	5 monther needing surgery	5 monther needing surgery	5m	Male	Referred to other hospital	Intussusception
61.	Big Tetanus girl	BTG	11y	Female	Referred to other	Seizures History

					hospital	suggestive of Tetanus
62.	CSM child connected father	CSM child connected father	5y	Male	Referred to other hospital	Meningitis
63.	Large 7 year tetanus	Large 7 year tetanus	7Y	Female	Referred to other hospital	Seizures/ History suggestive of Tetanus
64.	Neonate from outside hospital	Neonate from outside hospital	Neonate	Male	Referred to other hospital	Severe Birth Asphyxia
65.	Oragnge t 2 SCD	Oragnge t 2 SCD	7Y	Male	Referred to other hospital	Sickling crises
66.	Erbs Baby	Erbs Baby	8m	Male	To other Unit	Erbs' Palsy
67.	Habeeb	HBB	4m	Male	To other Unit	Intususception
68.	Hypospadias	Hypospadias	2m	Male	To other Unit	Hypospadias
69.	Matron's Daughter	Matron's Daughter	13y	Female	To other Unit	Acute Appendicitis
70.	Muslim Hydroceph boy	Muslim Hydroceph boy	4m	Male	To other Unit	Hydrocephalus
71.	Red Tee	Red Tee	2y	Male	To other Unit	Lower limb Abscess
72.	4 yr old girl Mama boy	4 yr old girl Mama boy	4y	Female	To Outpatients	ARI
73.	7 Sickler girl	7 Sickler girl	7Y	Female	To Outpatients	Sickling crises
74.	Brown Top Toddler	Brown Top Toddler	3y	Male	To Outpatients	Neurofibromatosis
75.	Calista Umeh	Calista Umeh	4m	Female	To Outpatients	Gastroenteritis [Heevro patient]

76.	Cele girl1	Cele girl1	6y	Female	To Outpatients	Meningitis
77.	Igbo woman's boy	Igbo woman's boy	3m	Male	To Outpatients	ARI
78.	Orange Tshirt boy	Orange Tshirt boy	3y	Male	To Outpatients	Malaria
79.	Oshodi boy 3	Oshodi boy 3	3y	Male	To Outpatients	Cellulitis
80.	Purple Ma baby	Purple Ma baby	Neonate	Male	To Outpatients	Gastroenteritis
81.	Adesola Praise	A. Prz	Neonate	Male	Transferred to the wards	ARI/Sepsis
82.	Another outside neonate	Another outside neonate	Neonate	Male	Transferred to the wards	SBA
83.	Blue lace girl-Kasunmo girl	Blue lace girl-	4y	Female	Transferred to the wards	Burns
84.	CSM Big boy	CSM Big boy	13y	Male	Transferred to the wards	Meningitis
85.	Joseph Wisdom	J WM	7m	Male	Transferred to the wards	Seizures/Meningitis
86.	Stevens Johnsons boy	Stevens Johnsons boy	5y	Male	DIED	Stevens' Johnson syndrome
87.	Yellow t	Yellow t	10y	Male	Transferred to the wards	UTI
88.	Ankara and quiet mother	Ankara and quiet mother	Neonate	Unassigned	To Outpatients	Sickling crises
89.	Canadian girl	Canadian girl	3y	Female	Referred to other hospital	Cerebral palsy

90.	**Child sent away**	**Child sent away**	**Neonate**	**Unassigned**	**Referred to other hospital**	**n/a**
91.	**Come and answer me mother**	**Come and answer me mother**	**5m**	**Unassigned**	**Referred to other hospital**	**n/a**
92.	**D3 boy admited or not**	**D3 boy admited or not**	**2y**	**Unassigned**	**Transferred to wards**	**n/a**
93.	**Jaundice clinic**	**Jaundice clinic**	**Neonate**	**Unassigned**	**To Outpatients**	**Neonatal Jaundice**
94.	**Pink Vester**	**Pink Vester**	**11m**	**Unassigned**	**Discharged HOME**	**n/a**
95.	**Room kid 1 LP**	**Room kid 1 LP**	**11m**	**Unassigned**	**Transferred to wards**	**Meningitis**
96.	**Urinary distress**	**Urinary distress**	**2y**	**Unassigned**	**Discharged Home**	**UTI**
97.	**Venepuncture boy 8**	**Venepuncture boy 8**	**8y**	**Male**	**Discharged Home**	**n/a**
98.	**Very prem baby**	**Very prem baby**	**Neonate**	**male**	**Admitted to CHER**	**Neonatal sepsis**
99.	**Niki Afr Baby girl**	**Niki Afr Baby girl**	**3m**	**Female**	**Admitted to CHER**	**Sepsis/ARI**

The Vignette folder

Vignette 1

"AZ baby" was a day-old male from Ojo, Lagos who presented with Difficulty breathing following birth (severe birth asphyxia suspected).

His mothers' antenatal care was at the same private facility in Ojo where he was born following a Vaginal Delivery; he was given the Bacillus Calmette–Guérin BCG vaccine and has only been fed on breast milk.

The working management plan at CHER was to manage supportively, ruling out further complications of Severe Birth Asphyxia.

Impressions following the interview: The parents appeared to have engaged with CHER processes effectively overall. The strongest pointers to this are the purchase of required materials appears complete, and the father is available for errands and support. Also the mother is university educated which may suggest a better grasp of any provided information.

Following the outcome: Admitted to CHER, I was glad the child appeared to be progressing through the care processes unhindered

Az neonate 1day Male

There is a woman sitting calmly on a bed in Ward/Bay 2, she is looking a little tired, wearing a white shirt over a native wrapper. She is surrounded by new-looking plastic bags, the type issued by the Pharmacy. I approach and introduce myself, she says "No problem aunty, we can yarn now, we have done our admission and now the Dad has gone to buy food for me. They don't have light and I want "cold pure" [refridgerated water sold in most kiosks in Lagos and directly outside the CHER]. "We are together here"

"On Saturday the labour started so i went to the hospital they said the cervix is not open and that it is what they call "false labour" . But i told them i saw this "show" as they told us. I went home and it [the pain] continued for some days .. i kept going

back to the hospital...everyday. After 2 days the pain itself stopped but the "show" kept coming. Yesterday i went to the antenatal for my day, around noon...the chief nurse checked and said the cervix was open 2cm and they asked me to go home and bring my load [packed bags]. When i came they put me on bed ...by 4o'clock the cervix was 3cm and by 8 o'clock it was 4cm."

"It stopped at 4cm... the pain kept coming up till 12 at night...although i was being monitored and they decided to give me "hot drip" [Syntocinon drip/iv infusion for making the contractions more effective], and it was at 6 am i gave birth...I can say that hot drip is not a nice experience."

"He came with his head [The delivery was vertex/cephalic]...but the problem was he was not crying...they tried to revive but they don't have oxygen there. When their senior doctor came in the morning...no afternoon he referred us to LUTH and we came here direct" [with her husband]

"but we did not get here on time because we had to go home...it was after 12 [noon] when the doctor came and we had to get home , get to the bank and then start coming here, and the hold up..." [she shakes her head] "we are coming from Okoko" [well over an hour to LUTH without traffic]

"let's say we reach here around 7:30[pm]"

She states that because the doctors were busy and the waiting room was full, they were not attended to until 9:30pm, and that the nurses had explained to her that they had come in during the handover and that they should "exercise patience"

Once they were seen, the child was admitted immediately and "because we came with a letter they read it first and then i gave my own explanation . Then they asked my husband to get some drugs and the nurse to prepare the bed"

"I was afraid that there would be no bed...we had heard them telling some people already...so we were lucky to be admitted"

"Today now, they have been drawing blood" samples had been taken also yesterday but the results were still not available. "we were even asked to do an Xray but since she was on oxygen ...we are waiting".

"I feel he is improving and at least the breath is coming. When he cries it is a little louder that yesterday." "Myself am having pains, you know...because of the stitches..i am just managing to improvise and do the washing they told me about"[sitz baths].

The mother is a B.Ed graduate who is currently unemployed and is married to 32 year old business man. They have no other children do not own a car and lie in a 2 br flat in Okoko [Badagry LGA] Lagos. Water supply is via well water using an electric pump.

Vignette 2

"CC Baby " was a 3 month old female infant from Ikorodu, Lagos who presented with signs of a respiratory illness.
Her mother's antenatal care was at the same private hospital in Ikorodu Lagos where she was born following a vaginal delivery. CC had been fully immunized for her age according to a stamped completed Road to Health Card. She was breastfed and at the time of the study was being weaned to bottle feeding .

The working management plan at CHER was to determine the cause of the respiratory illness and rule out a co-infection with Malaria and or sepsis

Impressions following the interview: The family appears to be engaging with CHER processes effectively overall. The strongest pointers to this are the presence of the extended family, an aunt (mother's sister) to assist with purchase of required materials, errands and support.
I am noting the mother's position on not self medicating is interesting. The reasons given are interesting.

Following the outcome: Admitted to CHER, This child appeared to be improving (improved work of breathing) when I looked in on her the following day.

"CC Baby " 3months Female

I turn to the mother of CC. She attended CHER a 8am this morning because CC has had a cough for 5 days, her younger sister is with her , they are both hairdressers. Her husband is a farmer, She tells me she lives in Ijoko on the border between Lagos and Ogun State (Ikorodu Local Goverment Area) . She arranges her bags around her and shifts in her white chair, Dr L has asked her to wait to be seen, this is why we have time to chat. When I ask how she came to be in CHER she says: "Na private we go, them give us Beechams ampiclox , amoxyl-normal one but the ampiclox na Beechams, paracetamol and multivitamin" "Me myself I was thinking I would give flagyl syrup too, when she purge and cough, but no, so i go hospital, after we come to Eko (Lagos)"

"Why all the way from Ijoko?" "I use to use Ikeja General , but as dem dey strike I come here"

Dr L asks Dr K to please come and look at the liver on the Chubby baby. Dr K does a quick examination (2min) and says "Liver about 7 down"[enlarged liver]" "No spleen sha?" "No oh" "Thanks " She writes a white prescription and continues her notes.

We are discussing traditional medication and using these "concoctions" at home. She displays confidence in being able to treat simple conditions:

"What is there in fever ehn Dockie? Simple matter of Nivaquine and tablets. Who doesn't know that? Who will not know Panadol for fever if it is not too hot? Abeg (similar to "please!" as she rolls her eyes) Hospital is for when it is serious and the child is not picking (not improving). It is if I or the Daddy are able to drive to the GH when the sickness is just starting, maybe because it is weekend, otherwise I must try the drug at home. This baby girl now, she is small, and we have only one girl since we have been praying- so I came to hospital straight!! After trying our GH Ikorodu, they said Fashola and the GH doctors are fighting!,I did not waste time to drug her at home, after that we go private before we come from Ikorodu to here.

I ask about her family, she tells me CC is the 4th child with 2 older brothers (13 years and 11 years respectively) and one older sister aged 7years. Dr L tells Chubby baby's mother that some tests are needed and asks, "Do you have your immunization card?" "Yes i have the thing outside" The younger sister, who has been silent throughout is sent out for the card, she quickly leaves the room to get the information and is back within a minute, as Dr L reads through the green road to

health card. Dr L then asks the mother to strip the baby so she can weigh her, using the infant scales

Vignette 3

"DKI"* was a 5 month old male child from Ojo, Lagos who presented with a history of diarrheal illness and a "high" fever. His parents also reported febrile seizures.
His mothers' antenatal care had been conducted at a public hospital facility in Ojo, Lagos State-the same facility at which he was born following a vaginal delivery.
His immunization history was up to date and his (RTH) card completed.
He was bottle-fed from the first month of life .
The management plan at CHER was to establish cause of Gastroenteritis/ and rule out co-infection with Malaria/Febrile convulsions

Impressions following the interview: These parents appeared to have engaged with CHER processes effectively overall. Pointers to this involve a detailed awareness of changes in status of the child. Also the purchase of required materials appears complete, and the father is reachable if required for errands and support (note educated mother)

Following the outcome: Admitted to CHER, I was glad the child appeared to be progressing through the care processes unhindered

DKI 5 months Male

Mother/informant

"I took him to where i delivered him, the military hospital at Ojo[Nigerian Navy Hospital], near where we live."

"He was stooling and vomiting for over 2 weeks, but on Friday he started having a very high fever which makes him to be convulsing...I was told it was malaria and lack of appetite." I ask about his feeding and she tells me she started supplemental feeds from the very first week because she felt "breastmilk can't be enough to satisfy him, now"[emphasis "now" used here again]"I added pap from the third month."
Her antenatal care at the NM Hospital was uneventful and she had her immunizations, and the delivery was normal "head delivery" (spontaneous vaginal SVD).

At the NM Hospital they were not admitted and they were given a prescription and sent home. "They also gave him one drug, phenalzine? I don't know if that is it, to make him sleep because he was restless...He was calmer and sleeping when we got home but he was not really better. Then on Friday he just started screaming and convulsing and stooling..." she shakes her head and continues, "so we took him to the military hospital where they gave him drip Paracetamol and Multivite syrups"

"He was conscious but continued to convulse, and it wasn't stopping so when we went to them yesterday, they referred us to LUTH. We arrived here after 4pm. ..we only waited about 15-30minutes after showing them the referral letter and we were given a bed and then an injection to reduce the convulsions...they then began to run the tests. He hasn't had any convulsions since he came here, sha (though), and now he is eating well...it is just for him to have strength and be more conscious."

The mother is herself a teacher at a private secondary school in Lagos [she has a BSc Public Administration] and the father is a stenographer.[i am told she is unaware of a family history of convulsions] She declines to mention her husband's age. D has one sibling, a sister, "The older one is a girl, 2 years."

D has been immunized "all except measles...that is for 9 months ." she explains. His elder sibling is healthy and is being looked after by her "co-worker" because "this place is too hectic and i can't bring her here". Her husband is presently at work and will come over afterwards.

She feels the CHER is "crowded...and there are too few beds. The work here is tedious, see how that Dr said he would give me a note now and i have been waiting since!" The family lives in a 2 bedroom flat in Ojo where their water is delivered

weekly "by tanker" and they have "standard NEPA supply" for electricity. They also have a car.

Vignette 4

"KSMB" was an 8month old male infant from Imo State (outside Lagos) who presented with signs of anaemia, and a respiratory infection.
His mother had never received antenatal care during the pregnancy and he was born at home with the assistance of a Traditional Birth Attendant.
He had not been immunized at the time of presentation to CHER and had never been exclusively breastfed, having been fed on local pap mixtures.
The working management plan was to supportively correct the anaemia, establish the cause of the infection and rule out co-existing sepsis.

Impressions following the interview: The mother appeared to be struggling with engaging with CHER processes effectively. Also the child's birth and immunization history reflected limited engagement with formal healthcare.

The strongest pointers to this are absence of extras of disposables-the child was soaked already), a very small bag and , and no history of a present partner. However I get the impression she is , getting some assistance (possibly neighbour charity from the other mothers?).
Note unemployed uneducated mother-limited access to finance and social support-being given temporary shelter far from her home.

Following the outcome: Admitted to CHER, however some of the requested drugs remained unbought and she still had no extra diapers the following day when I looked in on her.

KSMB 8 month Male

I return to room 3 and the KSMB's mother is sleeping while sitting and leaning forward against the couch/bed. The child is also sleeping and has a scalp vein access port (on the R parietal region). He is wearing a disposable diaper [Pampers] which is visibly full of urine; I look around but cannot see a pack of Pampers anywhere around the couch.

I wake her gently and she slowly raises her head. As soon as she focuses on my face she starts and says "abeg, my husband and im brother them go come, please..." [she has recognised me from the round] i quickly assure her that i am not here to bother

her about the samples, and that i am doing a study about the emergency room and want to ask her a few questions about how she has fared

She visibly relaxes and so i ask what brought her to LUTH

"E dey vomit and stool and e don dey tey,..reach one month" "The vomiting before dey reach 3 times 4 times even, but since i come here and them give am injection, e never vomit but he has stooled"

I ask why and how she came to LUTH "Na my husband bring me come here yesterday morning" "we been go another hospital for Lagos here but e no take bed there them write paper make we come , them no give any medicine" She does not know the name of the hospital [see case note review].

I ask where she came from "We come from village to carry this baby" i ask when "I no remember the day" I ask , " What did you give in the village for this illness? "All this water, water, only"

"See, this boy yesterday as we reach here, the boy white e just white and him body dey hot."

[I realize the child must have been severely anaemic and febrile and this is the main reason for the urgent presentation to LUTH.

I ask where the child was born "Nwajiugbe 22 Tuesday" "February". I ask if the child was given any immunizations "Mba, e bim e na village nime ndi na gwuogwu and enwenem uno"[I had him in the village in a herbalist/traditional birth place and I have no home of my own]

When i ask what she does for a living, she says "If i go buy groundnuts i cook i sell. But i don stop am ...no money cook,…no money...nothing"

She is 18 years old and was only educated "to primary 6" is the first wife of her husband [that she knows of] and he is a "offload" [they follow long-haul trailers and lorries and help offload the cargoes in different cities. She thinks he is 23 and smiles a bit when we discuss this.

They have no fixed home as he is always on the road and she and the child "we just dey hang everywhere we get to sleep" "This boy family [the husband] if this pickin sick i go meet them, them tell me say, na me born am make i dey go, make i train am " "Is is good for somebody ear" She shakes her hear "Is it sound like good?Even if i beg them...they will not give me"

I ask then where they are staying in Lagos "we are staying somebody house" "O one woman onyele anyi be bi o maka this boy ka ya me m allow" A good Samaritan has allowed her to sleep in her boy's quarters. She met the lady for the first time when she came to Lagos.

Why Lagos I ask, [there are many hospitals not on strike between Imo state and Lagos]"As the papa is in Lagos before me i owe money from my girlfriend wey no village, come carry the boy come , make the papa see am"

She tells me they drink well water and use the WC now in Lagos, but her accommodations are variable and she tells me in Igbo how it all depends on where she is staying at any one time.

I then ask if she has been happy with her time in LUTH, whether anyone has harassed her or whether the fans are not cooling well enough , whether the doctors

or the nurses or even other patients are bullying her,[i assure her she can tell me]

She smiles and even laughs a bit and says "...i like am...no quarrel anywhere"

Vignette 5

KLA was a 9 month old Female infant from Badagry, Lagos State who presented with signs of fever, respiratory illness and diarrhea.
Her mother's antenatal care was conducted at the same facility where she was later born following a vaginal delivery.
She was fully immunized and had been breastfed exclusively and waened at 6 months
The working management plan was to manage supportively treating for malaria and identifying/treating the causes of any attending co-infections

Impressions following the interview: This mother appeared to have engaged with CHER processes effectively overall.

Pointers to this involve a detailed awareness of changes in status of the child. Also the purchase of required materials appears complete.
However this university educated mother clearly has expressed dissatisfaction with the services-a conversation with a junior doctor has left her feeling very put out.

Following the outcome: Admitted to CHER, I was glad the child appeared to be progressing through the care processes unhindered. The mother's concerns about the quality of communication with her doctor is noteworthy- important to note how this affected the experience

I ask how she is "What you people here have done is more than I can.... I am fagged out...tired." I start introducing myself she waves "I have already read your poster, let me carry on please.

KLA aged 9m Female

She adjusts the baby whom she is breastfeeding "I came here on Tuesday night. I had brought her to the clinic appointment on Tuesday afternoon and by evening she was vomiting and coughing seriously. I decided to rush her down. I came alone, it was after 7pm-around 7:25pm...They did not attendd to me fast , in fact one of the doctors that i met that day...He is not a good doctor...that job is for people ... he was

passionless...he is in the wrong profession. I am a teacher and i enjoy what i do! I saw banking now? But it is not only about money!.

"I came, i spoke to him...they were pushing us from one to another "Why didn't you keep this child till tomorrow pa pa[might as well]!.. I am highly disappointed- I was very upset . I will write to SEVICOM, i am a civil servant, I know my rights!

"In my place where i work, you would just get a query for that kind of behaviour! That is why many of these doctors don't tell patients their names and don't wear... I am highly disappointed- I was very upset, I was shedding tears...A child ,temperature 40 degrees?

"Then they said "the night shift will soon come" Toying with life, i don't blame them, they see dead people every day...I told them there is seed time and harvest, what you sow, you will reap" At this time the other lady chimes in at "Reap"

"Like this man now [gestures to the still busy Consultant CHER] his children will walk into favour wherever they go, because he is very hardworking, no matter who you are." The other mother agrees and nods vigorously.

I ask why she come all the way to LUTH "Our paediatrician at the French Village lef.. she said she needed more scope...shallow waters...I agreed with her."

"To 12! We were finally admitted at to 12! The only person i could call was my younger brother, but he had left by 11 o'clock so all that walking to the lab and the Adult A and E to pay and all that i was doing it in the midnight alone. And i am HBSS, they want another casualty here on their hands!" [Explanation for the Jaundice i noted earlier]

“The nurses? They are doing their best but the doctors...For this girl, [looks down at the child] so far as she is still coughin and vomiting, i am not happy.” A nurse PNO comes in to check her child’s notes.

Her child is a 9month 3 week old girl, the mother is a lecturer at the Nigerian French Language Village with a BA from LASU and a MA from UNILAG. Her first child is a boy and he is 3 years old, and “his father is minding him at home”. Her husband is a business man who supplies drug and books to schools. For child care her children go to work with her as “The crèche and nursery are right there by the office.”

They live in a 2 bed roomed flat at the NFV and have a car and a TV. Water is via borehole and “bought bottled /pure drinking water”.

She treats herself for her Anemia and doesn’t like the LUTH Resident Specialist Hematologist for reasons she doesn’t articulate “I met him when i was on admission...nh n hi don’t think...no” She shakes her head and shudders.

Her deliveries and antenatal care were both at LUTH, and both births were following Caeserian sections following last trimester crises of her Sickle cell anemia.

“I just want all doctors to know why they are here...it is not just a high paying job...i believe in fulfilment- whatever you do on earth is not in vain- think of posterity not prosperity. I still call my obstetrics doctor from before...not these doctors, i believe a doctor should not talk like an agbero. If i had a gun that day....” This draws peals of laughter from all the mothers in the room and the CCHER smiles a bit and goes back to work.

[Agbero: popular name for an out of work, possibly violent (and/or) drug-addicted] young man, found at bus parks working for day wages as touts or loaders for haulage companies].

On self medication at home she had this to say: "am sure all these orisirishi (Lagos patois for various/medley/mishmash) work, but if I have drugs, me I will use them , yes now. Only for something you can't treat easily, maybe then, but for that you may need to go outside Lagos. Maybe even to the real heart of maybe Ogun or Oyo to see those serious Baba Alawo (herbalists/medicine men). But not for small fever or cough. I prefer pharmaceuticals, drugs rather.

Vignette 6 Smtck 1y 4m Male

"SMTCK"* was a 16month old male infant from Surulere, Lagos who presented with a neck swelling.
His mothers' antenatal care was conducted at the same facility in which he was born via vaginal delivery. He was fully immunized for his age and had been weaned at 3months
The working management plan was to incise and drain the abscess and treat with broad spectrum antibiotics and supportive therapy.

Impressions following the interview: The mother appeared to have engaged with CHER processes effectively overall. Demonstration of interaction with health professionals at home, leading to enhanced and rapid engagement with care seeking

Mother displays a detailed awareness of changes in status of the child. Also the purchase of required materials appears complete, and has access to family for required for errands and support.

Following the outcome: Admitted to CHER, The child appeared to be progressing through the care processes unhindered

A tall well built lady in casual traditional dress then snags my sleeve, "Oya auntie Researcher, ask me now!" "Madam wetin do you, now? You know say I dey do study?" I laughingly aks her "Yes i don read your advertisement [poster] me i wan talk now." I ask of she will sign a consent form, "Why, can't i just talk like this, abeg abeg k am bido[please let me begin]na Sunday we come he had a big boil, in fact if you saw the neck that time...the whole neck was like a football! They said we should go for Xray and scan, and that on Monday they will come and drain it...but before they came the thing leaked on its own...since then he has been improving...but since yesterday the pus stopped coming out. I want them to discharge me, they said i can't go home."

[i am all the time watching this little boy hungrily eating and his face covered with the yellow dust from Cheese Balls into which his entire hand is constantly dipping.]

“I want go and treat myself, i am pregnant-just one month yes, but if i stay here for up to a week, i will fall ill...the environment...I have been begging [she shifts her head towards the CCHER] him. And the nurses say the temperature is ok....My sister is a doctor, she was the one that brought us here. UP till then I had been treating at home and she came to work that weekend so when i said the...it all started like fever, very high fever on Tuesday, then the thing appeared like small boil, before you know it, the boil was growing and growing from 8 in the evening to 6 in the morning the thing swelled up enh? Even my sister thought i was just talking...till she saw us here.”

“First i gave him chloroquine for the fever, on that Tuesday, my sister (a medical doctor) always says we should do that. Paracetamol first then Chloroquine then Lonart, then she said to try Amoxyl, then he finally slept on Saturday and the fever went down, then this boil...When she (the medical sister doctor) saw it that Sunday morning she said because it is very near the respiratory area we should come here.”

“They answered us very fast, you know i came with her here now, but now i want to go, i had even called her to say they had discharged us because he is well now, see?”

“I am at home, I have HND but am not working. We usually go to Chosen Treasure private hospital at Ijesha, but this time my sister said LUTH. “ She has 4 children 8y [girl] 5year [boy], 3year[girl], 1y 4 months [Boy-patient]”All normal delivery..For the last two i did Baby Friendly- till one year 4 months She lives with her husband a 35 year old businessman in the import export business, and they live in a 3 Be room bungalow in Satellite town and own a TV and a car. Water supply is vis borehole,

“But we drink bottled water only” Her younger sister aged 15 who lives with family helps with child care.

Vignette 7

"L WDM*" was a 5 month old male infant from Ibeju Lekki, Lagos who presented with signs of "overwheliming" sepsis. His mother had received antenatal care from a TBA, and her delivery was at home attended by a TBA.

He had received only the BCG vaccine and had been fed on breastmilk and water from birth

The working management plan at CHER was to treat with broad spectrum antibiotics and supportive therapy

Impressions following the interview: The mother appeared to have only been able to engage with care seeking with the support of the community, her Church and the kindness of other mothers at CHER.
Concerns from this interview included the family history of death of an older sibling,the poor immunization history, mother's partners not being available for child support, and her state of homelessness.

Following the outcome: Admitted to CHER, The child remained in care until discharged 2 days later, many investigations remained incomplete

informant mother "P", place of residence Kuramo Waters [a known squatter colony along one of the smaller islands in the Lagos Lekki Peninsula , and one of the most deprived areas of Lagos State-the irony is that Lekki Peninsula contains some of the most affluent addresses in the state and single undeveloped lots of property here sell for upwards of £1000,000].

The mother is a young woman very lean with very short hair wearing a black striped polo shirt with blue jeans. She is sitting when i start asking my questions and seems quite drowsy, she keeps putting her head down on the cot edge while speaking. She speaks slowly dragging her sentences a bit, but her speech is otherwise clear. She generally speaks in English or slight patois

“he is 4 months 17 days” “He started coughing and water stool and having measles...when i gave him food he used to vomit it...this thing is coming from his eyes.”

“They all started at once like one week now.” When i ask if he had been otherwise well, she answers “it’s only teeth that is doing him before”. She leans back and takes a deep breath and wipes her eyes on the wrapper on the bed.

“As i didn’t know what is doing him, i go chemist for Kuramo there buy cough medicine, vitamin C and paracetamol syrup...but then as the sickness is getting worse, people there on the beach say to buy agbo [traditional herbal medicine concoction]..they said use pure water boiling to make the agbo and use to bath him and give a little to drink.” I no know whether PHC go even ask for money if I go so I do the Agbo, na small money, I dey wash cloth for the women before..so if she charge me, I go wash cloth

I ask how much she gave him and she says “ I have small flask, i use the cover , not even full to give him.” I ask how much the agbo cost and she says N550 [£2.50].She then shakes her head as though to clear it sits up in the chair and says “I don’t get myself.” [feeling out of sorts-patua].

When asked if she has come to the hospital alone “We are two, my second went to return the blood” I ask who this “second” person is “my neighbour we are going the same church...” The church is identified as the Redeemed Christian Church of God Jesus Centre, which is near the beach she lives on.

She continues "when the medicine is like not working because the water is not boiling, so i use rain water to make the agbo...i massage the boy with it and he drink small"

"As is still dey sick I go Massy [Massey street Children's Hospital], no, First i go council for Eti Osa, as i no know wetin do the boy...them give am injection and after we go..but then as the sickness is getting worse, My neighbour see me as we from come and say i should call my pastor and tell him...pastor say we should now go City of David Hospital-come send us with letter. When we reach there they give us paracetamol and some other things" Again she closes her eyes and leans back with a deep sigh. Myself I no for fit go private if not say na Church place be that. The money…private money dey dey big.

"The doctor at city of David say they doesn't used to stay there long and gave us transport [money. We call Pastor again and he advise us to come LUTH. But I go Massey" She stops again and shakes her head. "they too now send me to Eti Osa as i no get money with me...but they Drs are on strike so Pastor advise me again to go LUTH.

"It is God that helped us that we came this place. But me now I am not feeling fine" She has not eaten all day and her friend [lady who has accompanied her] has gone home.

When i ask what time they arrived in LUTH "midnight let's say latest 2...they didn't answer us, one woman's baby have just die and they told us ...no space...so we called pastor and he disturbed them then they answered us"

Pat herself is unemployed , when i ask she says "i am not doing anything" and she averts her eyes as she says this, when i ask about school she says, very quietly "nothing ,now".[now is often used in patua as emphasis, similar to "nothing , understand?", used here it does not mean that she is not presently in school]

"I would like to go to school and learn a work. I was a kid when i came to this Kuramo...we are two before but i did not see my second anymore"

She has been a mother before "that one is late..1 year 1 month girl, na measles , the kind that does not show...ehn inside one, is what killed her"

This present baby [Wisdom] was born at home on the beach i born am ...e come with head...and Native person use new razor blade to cut" The child has received immunizations at the Eti-Osa council primary health centre " BCG DPT but "not the one for mouth[polio], i no go that time" [where she also had her ANC] "when they give me day i go". According to his mother Wisdom has not been sickly, and she feeds him pap and breast milk.

When i ask her to describe her home she says "na this pako [wood]and tarpaulin we are use on the Beach...people are managing there...[makeshift shelters with no electricity or sewage]. Useless people dey there. All these grown up boys who smoke ...they are complaining, saying rubbish when i am massaging my baby, when he's crying they say "is he the only baby? Always crying" But when they want somebody to wash cloth for them they remember me, but sometimes them no go give me anything...they use the money to just be smoking all the time".

I ask about her partner she says "we were together before not now, he was living on Tarkwa Bay, but i don't know where he is now, i went to look for him but they say he

is no longer there." She never married him and cannot tell me how old he is or how long they were together, or if he was the father of the previous child.

Vignette 8

"DM' baby was a 6 month old female from Enugu State (outside Lagos) , who presented with signs of Gastrointestinal Obstruction and moderate anaemia
Her mother had received antenatal care from a TBA and her delivery was also taken by a TBA.
Her immunizations were reported up to date. She had been weaned at 2months
The management plan had included a blood transfusion. Her mother discharged the child without advice.

Impressions following the interview: This mother appeared to not have engaged well with the staff and process in CHER. Her stated opinions of staff as conceited/arrogant. Her Religious beliefs, together with these opinions may have some deleterious effects.
Staff on their part are visibly displeased with the woman for what seems to them to be her disregard of their requests for purchase of needed medications.

The misunderstanding leaves mild upset among both parties.

Following the outcome: DM discharged her baby against advice- she stated it was because of her religious beliefs. I am noting that the communication issues may have been contributory.

DM baby 6m Female

I see on the bed a 6m infant girl with a grossly distended abdomen and a naso-gastric tube attached to a latex glove using plaster [makeshift vacuum device]. 3 of the middle fingers of the glove are already more than halfway full of dark coloured fluid.

D's mother enters and is a large woman in full traditional dress, asking her helper a question in Igbo as she enters.

Dr Aj asks her "Sorry have you gotten the things they asked you to get?" "they didn't ask us anything" A slim nurse doing her observations at the same time asks "what of the drugs the flagyl?" "I don't know oh, I didn't buy any drug." Another mother speaking in Igbo says, "ihe mili ha gbata na ahu" *[translates as –"that water*

thing they put through into the body"] [iv fluid] "Oh is that flagyl? I thought it is drip" says the mother. The nurse is visibly unhappy with this she is a young ward sister [in her late 20's max] 5'9 fair in complexion and her hair is plaited into a short style and over all she is very neatly turned out in her uniform.

The mother notices the nurse is unhappy and quickly says "Please tell me the ones i will go and buy...the one they gave her before they didn't finish it and they took it away" [there is further back and forth about drugs and getting them, as the nurse seems to believe the woman is being difficult

The woman turns to another patient and loudly whispers "For here the Dr's na e bu li isi *(The doctors here are arrogant/conceited –literally translates as "have raised heads"). Dr Aj leaves the bay instructing the house officer [HO] to ensure the mother gets the prescription filled.*

I ask the mother for the events leading up to the presentation to CHER: "When this thing started it was like small, but ka the day gafara *[as the day went on] it was just more , after she no gree to go toilet.*

When I was pregnant with her, The Woman (traditional midwife/birth attendant) told me that if she did not come straight I would be going to the General (Hospital) but thank God she came straight, normal delivery, we did the cord cutting with Spirit blade in fire. She doesn't sick, but this one small she won't eat then last week she was not doing like she well. So I go the Woman place, na so she give me to purge her. But she no purge. From there, after like 2 days again the paining of the belly become too much so we go General and them write letter for me. I tell them say I want see my sister for Lagos for Abule Ijesha, so them write letter for me to dis LUTH.

Vignette 9

"SJB" was a 5y old male from Lagos Island, who presented with signs of wide spread desquamation of the skin.
His mother's antenatal care was conducted at a public hospitals in Lagos Island, where he was later born following a vaginal delivery.
He wasreported as fully immunized, had been bottle fed from birth
His management plan involved an urgent ward transfer to the burn unit

Impressions following the interview: These parents appeared to have engaged a lengthy home based and community directed treatment plan prior to coming to CHER. Once at CHER, the presence of extended family was plentiful.
There are many family members running necessary errands.
On their part, staff are expediting his care to the burn unit.

Following the outcome: This child died shortly after arriving at the wards . A nurse on duty sounded resigned when I asked about the child, the parents were expected shortly to conclude the paper work.

SJB 5 year Male

A loud wailing and crying from a child is heard suddenly from the reception area. Dr B enters the consulting room and says "there is a possible Stevens Johnson Case outside", then she leaves immediately. [loud crying continues, but is somewhat dampened when Dr B closes the door.]A white capped Senior matron enters "Dr K! There is one Steven Johnson outside! Did you ask them to go?" Dr L says" we have to find out if there is space on the wards" The SM continues "she said she gave one antibiotic, the bottle is here with her. How far, are you going to admit that diphtheria?"[the loud crying and wailing continues and the child is beginning to be heard saying "no no no don't no!" in Englih]

Dr K responds that the SJ child will be seen immediately and the PH child had been reviewed by Dr OD. The SM leaves Sister Crv enters again carrying some case record cards followed by a small man in a long polo top over black trousers, "please let them register...there is space in D" Turning to the man she says "so you register

and collect the small card eh?" He nods and thanks her. The door to the consulting room opens and a young boy about 4-5 years old enters wearing a pink hospital sheet crying loudly. "I want to LIE DOWN!" he screams and he is placed on an examination couch. "Cold cold cooollld!" and the Rotating fan is immediately switched off [I was nearest the switch]. He almost immediately stops crying and is shivering and whimpering quietly now. He is covered in desquamating sores and blisters and has been covered liberally with "gentian violet"

The mother enters a smallish light skinned woman [later confirm she is Igbo} and begins telling Dr L her child's history in English. The child was treated for fever using a "Nurse wey dey work for Massey" [a 'nurse' at the Massey Children's Hospital] . He had been treated with the Antimalarial treatment Chloroquine, and he developed itching "E never do am before, He woke up in the night say body is scratching me" for which the same Nurse prescribed piriton and "Rosiclox"-local brand of ampiclox- and calamine lotion. "After 3 days now, the body come be like e get boil boil every where and e dey shivering...That day we see nurse she say GH doctors are not working" "I said see the body is peeling..she then said to use sponge to wash everything away" Following this the peeling became even more wide spread as initially the "boils" were "on his chest first", at which point the nurse then prescribed erythromycin.. Overnight, the blistering became even more painful, at which time the family made arrangements to see their family doctor, who recommended the CHER

The mother of SJB is assuring DR L that "this not the first time he is use antibiots, but i not sure if na rosiclox, but e don use jawaclox before sha" "My husband friend wey be doctor na i give am the first one". "Sometimes whene e ot too much with fever e go get convulsion, go dey shivering" "You dey bring am come hospital that

time?" "no" "Na as strike dey so we come" GH was the initial choice considered by their Nurse, who then suggested CHER.

Vignette 10

"BKR baby" a 5 week old male infant from Apapa, Lagos who presented with signs suggestive of sepsis and a respiratory illness.
He had been born at a private facility, the same facility responsible for his mother's antenatal care.
He had been fully immunized for his age, and his RTH was updated accordingly. He was already being given water in addition to breast milk.

The working management plan had been to treat and establish the cause of the sepsis/infection.

Impressions following the interview: These parents appeared to have engaged with CHER processes effectively overall. Pointers to this involve a detailed awareness of changes in status of the child. Also the purchase of required materials appears complete, and the father is reachable if required for errands and support.
However I had concerns about the length of pre-CHER care seeking, and the managing doctor was unsure the history and the child's clinical status corresponded-also it was unclear (to the doctor) how long the child had remained in private care prior to attending CHER.

Following the outcome: BKR baby later died-within the first 24 hours of admission to CHER

BKR 5 weeks Male

I return to the ward where the mother with the 5 week old boy is [BKR baby] to chat with his mother.

She turns towards me as i enter , her eyes are puffy and red, but otherwise she is calm. I ask if i can have a short discussion with her about her child and their time in the emergency room and explain about the study show her the poster and my teeshirt.

"OF course go on"

BKR baby became unwell 2 days before attending CHER, his mother says, "first it as small , like no appetite for breastmilk, and maybe hot in the night, but then the vomiting started. The vomiting was much". She then took him to the family's private hospital nearby where the child was observed overnight and referred to the CHER in the morning.

I ask how he has been doing since he came into CHER "ah he has imporved..when we came the doctors that attended to us ...very good, the night doctors. The morning doctors too..i dno't know about these afternoon doctors" she purses up her mouth and looks pointedly in the direction of the nurses' station. I turn to see she is looking directly at where Dr Aj and the House Officer are sitting.

She gestures to the Dopamine injection again and says "I don't know why they won't give that" I explain that the drugs have to be administered at specific times as instructed by the doctors and she says a long drawn out "ooooooooh ohhhh ok i see" " he started vomiting and stooling...we went to a private hospital before coming here"

BKR Baby's mother tells me he has been exclusively breastfed "only breast ,no water oh" and that no one else at home has had any vomiting or diarrhea.

She states that child has never been unwell before this, she had a "normal delivery at that same place [the hospital] i do my antenatal there" "come with head..." and cried soon after delivery" "no problem" as regards the pregnancy itself.She was kept in hospital 3 days after "just to rest the body you know" [obstetricians rarely discharge new mothers home same or next day in Nigeria, unless there is a high daily hospital bill-my experience].

Dr Aj enters to see the baby in the next bed and BKR's mother turns to her "Dr come and see my baby "we are still coming" Dr Aj says head down in the notes as she moves off quickly. B's mother looks after her and does a quick nose wrinkle [indicating a tease or disdain for the person it is directed at].

I ask a few more questions about her and her family. She is a 28 year old "self employed"[usually a petty trader] and her husband is a 31year old worker at "Bacgo" large bag making factory.

She states "I don't like government hospitals...you know i have never heard of someone coming to LUTH except to hear the person now died! People are scared when they hear LUTH. But now ...my experience s that as you come you know you are somewhere! You know? Drs comes in groups, they really attend to you well. No how the baby must survive!"

The private hospital referred them to LUTH they presented to[same one] "We came together[husband] On their access to and availability of drugs and other requested materials while on admission to CHER

" anything they said we should buy, we bought it" "we bought some of the things here and some outside [other pharmacy]...except for gloves, we don't have gloves".

The parents then gathered their belongings and rove down to LUTH. BKR is the 3rd of 3 children with an older 10y old brother and 4 y old sister. Their home water supply is from purchased drinking "pure water"[individually packed sachets of drinking water sold in bags of 20 or more-usually affordable] "but we use well water to cook" and for bathing. Toilets are WC system.

Vignette 11

”CWDB was a 5 month old infant from Agege, Lagos who presented with signs of sepsis and fever. His mother had received no antenatal care and he was born at a private facility in Agege, Lagos.
His immunization was not up to date and he had been weaned to water before he was 2 months old.
The working management plan was to treat the infection(s) and manage supportively.

Impressions following the interview: These parents gave the impression of having acquiesced to the requirements of CHER treatment as advocated by the doctors and nurses. However, the mother demanding for oxygen (her admission) and being denied might have resulted in some friction(?)
The purchase of required materials appears complete, and the father is reachable if required for errands and support. However the incomplete immunization was worrisome.

Following the outcome: CWDB died within 24 hours of admission to CHER-parents flatly refused an autopsy when offered.

Child who died in the bay(CWDB) 5months , Male

As this conversation goes on i notice two male doctors who were rubbing the chest of a child two beds away stop and become very still. His mother begins to say “So that is it?” “Is that how , no! So you are leaving me!” She begins to pace back and forth and pray aloud “No God you raised the dead!””Return my child to me now” It has become very quiet in the room. All the mothers are shaking their headfs and looking downwards avoiding eye contact with her, and the doctors whispering to each other, leave the room together shoulder to shoulder. The mother continues “Jesus restore this boy , this baby...blood of Jesus”. She bends double at the waist and exhales loudly standing up and twisting herself outwards. She stands, places her hands on her hips and shakes her head. The Drs re-enter accompanied by two nurses [one a PNO the other a sister] who sliently observe the child . The mother begins again her prayers “Raise this child Lord” No-one has spoken to her, and her partner/husband

enters and walks slowly to her and puts his hand on her shoulder, she bends double again and continues parying. The nurses then begin to gather the clothing around the child and she says "Don't touch him, leave him he is coming back to me!" Her partner then slowly moves her out of the room and then the nurses remove the child from the room.

All through this time the family i am spending time with are sadly shaking their heads and saying softly under their breaths "ndo, oh" "sorry" "Jesus" "heeu!" all looking around and on making eye contact [with themselves and me] more head shaking and utterances of disbelief and sorrow continue.

The mother of the recently deceased child is also outside still staring at nothing in particular. I walk past and stand a few feet from her, I am standing, quietly, not even raising my notebook, I don't know what to say. Then she turns and says to me "Nurse the way they are treating person is not good...We came here since Saturday" I realise she must have seen me interviewing the other family and talking with the nurses.

I ask what she means and whether i can write down what she is saying, she agrees, and signs my consent form, continuing without pause " We thought it was small fever , for one week we dey house dey treat am small small. As e no cool down , e no chop, then we go to the CHC (Comprehensive Health Centre) They say them dey strike and he must get this oxygen of a thing, say make we go LUTH.

When we come they admit us, but in the night I see the oxygen is not blowing , so I tell them (nurses) say the oxygen is finish soon. They say make i go sit down wait. I go and call and call, no oxygen, until this morning...baby crying and crying..

When I say 'let me feed him' they say no he is on oxygen and the drip ...the doctor say he can't do it and … after now , after they change shift...the oxygen was finishing...i was shouting 'go and bring another one!' the doctors were just writing, writing, writing . the baby is dying no one to find solution."

"I even went to the oxygen place to tell them to come...they say i cannot enter so that it will not be like say i give them bribe...On getting here now the baby died."

"The same thing yesterday, two people died...they say the blood they fixed is the wrong size...that's what the morning people said... "who fix it now?" everybody is deny.

Even when they send the parents for drugs, to give the drugs now,…. they did not give ...till that baby died. It is not good oh!" she stops now, and shakes her head and looks past me, then she looks down and starts sobbing. After a few minutes she clears her throat and looks up again, focusing beyond me

I ask a few more questions about where the child was born "I born am for house with the native people " [The family lives in Agege LGA] and he'd had no immunizations.

While waiting with her, one of the nurses comes over to ask about consent for an autopsy, she strenuously declines, shaking her head, and telling the nurse to ask her husband instead.

When i asked why she would decline the autopsy "What for again, he is gone" with that she walked away.

Vignette 12

"FSH baby"* was a 5 day old female neonate from Lagos Island who presented with neonatal jaundice.
Her mother's antenatal care was conducted at the same private facility she was later born at, via Caesarean
Her immunization was up to date and she had been exclusively breastfed
The management plan was to manage the jaundice supportively using phototherapy and fluids.

Impressions following the interview: The parents appeared to have been able to engage with the CHER processes effectively.
Pointers to this include ready availability of the father for purchases and other errands.
I noted at the time that the father had developed a good rapport with the nurses,

Following the outcome: FSH baby was discharged HOME.

FSH Baby 5 days Female

I interview the mother of FSH baby, a 5 day old baby girl, whose older [2 yr] brother is at home with her own mother. She delivered this baby following a caesarean section at a private hospital in Lagos. "my first born had a problem, the water used for breathing was short and so because of that this one too was CS...the doctor advise us that i can't deliver normal again... to prevent rupture when i fall into labour" "we use BMH a private hospital on Lagos Island...because as government hospitals are on strike...normally i go to antenatal at Onikan Health Centre"

"The pregnancy was normal, all my immunization complete"

At this point the baby becomes fussy, and she stops speaking with me to breastfeed her and takes her down from the cot beneath the phototherapy lamp.

“So they tell me date and i come hospital for that CS. I supposed to wake [to be awake for the C/S] but they say they don’t have the injection so they make me sleep”

She was told the child cried at birth, and as far as she was aware there were no problems until she noticed the yellowness of the baby’s eyes the previous day.

“i noticed it yesterday her eyes were yellow...we were still at the hospital...they have to place her on the lamp and give her injection. So this morning my husband say we should come to LUTH...a family friend that is a doctor there at the private hospital advised us to com because they specialize on babies here. When we came we wait maybe 45minutes before they see and as us to register and send us to the other side to get sample before they bring us here. My husband went to the lab for the results ...now they have given us injections but no drugs...and she is under this light”

On using public hospital (LUTH) instead of her preferred private facility:

“but more than that we go to the GH, it is what we do for all of us, we don’t sick too much and the place is near…This time, because as government hospitals are on strike. We went to the private near us, when they wanted to send us again, they said the only place open is here. Normally we go to the GH.”

Interview with Mother, September 2010

She hopes to continue to breastfeed. They live in Lagos Island

Vignette 13

"PH Baby" was a 4 month old male infant from Port Harcourt (Outside Lagos) who presented with signs of a respiratory illness and a characteristic "whoop".
His mother had no antenatal care and his delivery was taken at home by a TBA
His immunization was incomplete beyond the birth BCG, and he had been fed on breast milk and water from birth

The working management plan was to manage as diphtheria until disproved by laboratory cultures ruling out other causes of the respiratory illness.

Impressions following the interview: The mother appeared to have only been able to engage with care seeking with the support of her mother.
Concerns from this interview included the poor immunization history, mother's partners not being available for child support, and her clear dependence on her mother for advice and support. The clinical status of the child was determined by the registrar not to warrant insisting on admission if the parent might have financial difficulty, which was implied. Furthermore the limited bedspaces meant isolation might be difficult.

Following the outcome: The child was discharged home on antibiotics- and given an early follow up date at the outpatient's department

PH Baby 4 month Male

the child's grandmother. She describes the child's cough which has been on for over a week, " the cough is making the breathing difficult for the past three days." The child begins a spate of continuous coughing which takes almost 2 minutes to subside. " She came here to visit me, the father is in Port Harcourt, she herself came just this last month-August. When asked what her daughter does for a living she says "Hairdresser"

She explains that the "chemist" they saw , here in Lagos gave the child Coflin and Blood Tonic, but as she saw no improvement in the boy she decided on her own to come here.

Dr K asks if the child has been immunized and the mother answers " he has had BCG only the BCG." Dr K's impression is of Diptheria, "Whooping cough . "My main worry is whether the nurses will allow the child to stay in CHER because of the risk of cross infection; they would normally insist this type of child go directly to the wards." "This was mainly because of the open plan design of the former place, you know it abi?" I admit i am familiar with the old CHER "And I know the matron, won't like to keep this child here " Dr L adds, "Yes " replies Dr K.

"So madam, am a so N5900,(~£24) lati admission" and begins to fill out a white prescription sheet and the yellow treatment card.

I ask the PH mom how long she has been here at CHER. "since boya (about) 9-10 this morning" "I no know say i suppose enter". I ask if she has eaten "Me i never eat but my baby done eat". When i ask where she has come from she says "Akinpelu, Ketu side" [distance ?? but i do know it would take at least an hour by car, barring traffic, depending on time of day]. I ask why she came to LUTH "when we go IKosi General Health Centre, near my house they direct us come here" [again the issue of the doctors strike which is still on-going].

When i ask her whether she is aware of how much the admission will cost she says "N5900, but I no go house. As them tell me, I ask them say I fit pay two times, im say no, and my mother doesn't have that money .

Vignette 14

"BTG" was an 11 year old girl from the Lagos Mainland who presented with a history of tonic-clonic seizures.
He birth and antenatal histories were unremarkable and recorded.
She was diagnosed as a potential tetanus case due to a history of recent injuries without appropriate immunization
The working management plan had been to supportively manage her seizure frequency and investigate for differential causes of seizures, however a lack of bed spaces at CHER meant she was referred onwards to an alternative facility.

Impressions following the interview: The parents appeared to have attempted early with formal care seeking and the CHER processes
The strongest pointers to this are the presence of the parents and extended family providing history, roles during the history and being available for errands and support.

Following the outcome: This child was referred on due to an absence of age-appropriate bed spaces

I ask about the older female tetanus patient who had been told to wait for a referral onwards to another facility "we have no cots available eh, and the child is big." "are they going to Massey then?" "No LASUTH is better, they need a teaching hospital". The mother of the girl comes out into the corridor and sits beside me in the waiting area, "Only God will help us" I ask "Madam how far now, has your husband gone?"

She turns to me "No he has only gone to get the taxi, we are going." I ask what happened and she says "Na Thursday i some from shop , them tell me say as she go spread cloth wey she wash, them no see am again. As them look she dey come but her body dey do as ... [and demonstrates a very stiff gait]... as they look them say "abi na joke" but as them see the girl they know say na serious something.

When i return now, they say make i take hot water press the body. The next day being Friday no change so on Saturday, we go nurse and she give us injection and

medicine, nothing happen, her body still dey do ...[demonstrates again] and dey pain am she no fit move well at all. As so we carry am go private hospital for Monday, na there them write letter for us to come LUTH now...

But now no bed. Why no bed? Hospital supposed to have extra bed now? What do i do if anything happen to her now?" A woman in an orange top also waiting in the waiting area shakes her head and mumbles her condolences.

Vignette 15

"HBB"was a 4 year old male infant from Ikorodu, Lagos, who presented with signs consistent with a possible intussusception. His mother's antenatal history involved the same private care facility he was delivered at,via vaginal delivery. He was fully immunized and had a nutritional history including breastfeeding following being weaned to local pap mixture.
The working management plan was to transfer HBB to the paediatric surgical unit for care and immediate surgery.

Impressions following the interview: The parents appeared to have engaged with CHER processes effectively overall. The strongest pointers to this are the purchase of required materials appears complete, and the father is available for errands , supporting needed radiological imaging and other support.
My concern was the father's stated objection to surgery- his engagement with the hosue officer on duty was however effective and he changed his mind, allowing the child's procedure
Following the outcome: Transferred to the Paediatric Surgery Unit. , I received direct reports that the child appeared to be progressing through the care processes unhindered, post-operatively.

"HBB" 4months Male

Father says " on Saturday the boy did not eat breast-milk, ...so we went to the [private] hospital... where they gave us some drugs and injections" When i ask to see these, i am shown a generic pack of Ceftriaxone antibiotic "for intramuscular injection and intravenous use".

"And this thing" he points to the Biurettrol "drip".

"they admit us that very Saturday until Sunday. When i reach there on Sunday, I notice the stomach and the mummy say he didn't stool. Then on Monday he stooled and small blood come out, that's when the doctor ask us to come here."

I ask why there was a delay in coming to LUTH, they explain that they left the hospital late on Monday and Tuesday saw severe flooding of the principal access

road from the area of Lagos they live in [Ikorodu] to the Mainland and it had taken then over 6 hours to get to LUTH today.

"We are come from Ikorodu...everywhere blocked, nor road...we left home 5:30 today"

When i ask how they made it through the flood "we enter okada to pass the water, take come" They have patronised the commercial motorcyclists [usually banned on major highways]

Father excuses himself to go and pay for a prescription for IV Dextrose at the CHER Pharmacy. I ask the mother about what happened when she got to CHER. "They attend to us fast oh" "they quickly send us to go buy the drugs. "My husband talk to them that we come from a far place...this na our only pickin we born...we done wait long before we born this one...7 years"

She goes on "When we first tell them the problem say im no stool, they ask if e piss, i say yes, the doctors say "no problem". Na my mummy come say the pampers get something like catarrh and blood, na so we come ask am why." This was ehn the referral began to be considered by the private hospital doctor [i see referral letter, signed by a MO] The notes are then taken by one of the nurses for her observations.

The father then returns saying the bank had closed and he could not now make payments for the CHER pharmacy and that he had been directed to the "Adult emergency".

He is also holding a radiology request form and when i ask him he says "they said we should come for scan at 5:30, i have told the nurse that they suppose follow us

but...” he shrugs and asks if i can help. I offer to ask the nurses but tell him that they will ensure he meets his appointment.

I ask the mother a few more questions and discover she is 30 years of age and she has been assisted in caring for her baby by her mother who visits regularly. She herself has not and has gone back to work since her baby was born: “make him grow well first”. Baby HBB has been fully immunized for his age, as shown on his record of Immunization “Road to health” card. This card was endorsed by the same private hospital they used for her antenatal care, where the child was born and from where the child was referred. The father says, “in fact that is our private doctor we always use him we have been with him for a long time, now over 9 years”. “He examined and quickly sent us here. As he sent us, we came quickly “The mother also explains that although the child has had an episode of cough and cold before this illness, “e did not sick at all” [he has never been seriously ill]. “Na because e no ‘gree eat him food n aim make us go hospital” [the loss of appetite was the main symptom which prompted them to seek care this time]. However she shows me a medical booklet from D$&£ Medical Centre showing treatment for a febrile illness and pallor treated in September. I ask if she showed this to the doctors at CHER, she says “they didn’t ask us for it”.

She has been exclusively breastfeeding “in fact for our area health centre they say you should not give anything except breast”. At home she gets her water supply for cooking from a borehole and the family uses a water closet system. The immunization card shows the child has received BCG OPV 0 HbV1.

Her husband then says "let us get ready for the scan o Doctor" I thank them for their time , give them the study phone number and allow them to prepare for their procedure.

Vignette 16

"A. Prz"* was a 5 week infant male from Agege, Lagos , with failure to thrive and signs of respiratory infection. His mother received no antenatal care and he was born at a private facility in Lagos. His immunization status was up to date for his age and he was reported as being exclusively breastfed.
The working management plan was to identify and treat the infections/sepsis

Impressions following the interview: The mother was relatively quiet woman. However, she did engaged with CHER processes effectively overall.
The strongest pointers to this were that the purchase of required materials appeared complete,
My primary concern was the absence of the father at the outset of the interactions in CHER. However a follow up phone call showed he had later arrived wth family members and assisted the movement into lying-in care.

Following the outcome: Transferred to the wards-the child was said to be progressing 2 days following presentation at CHER

A very emaciated young baby [looks like a neonate] is carried into the room by a very tall slim lady dressed in brown patterned anakara dress. The child is in a blue and white hat and blanket, among his other clothes. She begins to breastfeed as soon as she sits down, periodically lifting her head to pick her nose or scratch at her hair. Dr L re-enters the room and tells the woman in Yoruba "E ni suru [just be patient] doctor to ma rie en wa"[the doctor to see you is coming]. Then she says "This child looks very septic she quickly writes up a prescription for her and asks her how often she feeds the baby "like 5 times...both morning and night" "For how many minutres?" "Like 30 minutes" "5 times is not enough oh, as this baby is not gaining weight. Only feed breast milk for the first 6 months"

The woman nods not meeting the Doctor's eyes. Dr L turns to me ans says in a low voice, "No way this child is Exclusive"[the child is not being exclusively breastfed]. "This your baby is not gaining weight. Did the other doctor tell you your baby will need blood?" "yes" "Have you called your husband yet?" "HE will come later"

"Today, call him and tell him today...it is important" I ask the woman whether she has taken the child for care before this, she nods and indicates her local health centre near her home, the same facility which referred her. Dr L interjects: "Where is your husband? He needs to come and buy these things oh they will admit you...you can't do this work alone oh you hear? This is the list of things you will buy]...I want them to collect your blood , take it to the blood bank"

She turns to me, "the heart rate is quite high" turning back to the woman "If nobody comes to see you soon just enter that place [pointing towards the admission area/wards] and tell them to come and see you. The woman nods and Dr La leaves.

From our conversation, it emerges that APRZ was a term baby [spontaneous vertex delivery]delivered at a Church compound hospital [CAC Idimu, Lagos]to a mother aged 32 who is a petty trader and father works at the airport [baggage]. . Mother had no antenatal care, and when she developed malaria in pregnancy at 5 months, she was treated at health centre near her house in Egbeda- she has now moved to Alagbado [low rent areas on outskirts of Lagos]. Child has had only the first oral polio immunization, and the BCG so far- up to date for age. She insists she has exclusively breastfed the child. Water supply purchased "pure water", toilet facilities WC. The child is the 5th child, born to the family, the immediately preceding sibling was a still birth [other siblings female 10y, male 5 y, male 2 ½ y all well and attending school except for the smallest who is at nursery]. She usually seeks care at her local health centre . The mother has been educated to 6th form level [WAEC].

Vignette 17

"Blue lace girl" was a 4 year old girl from Apapa, Lagos, who presented with burns. Her mother's antenatal care was conducted at the same facility she was later born at via vaginal delivery. She was fully immunized at the time of the study.
The working management plan involved an urgent transfer to the Burn Unit.

Impressions following the interview: The parents appeared to have engaged with CHER processes effectively overall. The strongest pointers to this are the purchase of required materials appears complete, and the aunt is available for errands and support.

Following the outcome: Admitted to Burns unit (Transfer to the wards) , I was glad the child appeared to be progressing through the care processes unhindered

Blue Lace girl 4 years Female

I enter the doctor's consulting room in time to see Blue Lace's child 4 yr old girl being admitted to ward D2 by Dr ODu. Now that i can see the child more clearly i see her right arm and leg are covered in burns. Dr Bell has clerked and summarises, "Kerosene burns 13 hours duration, child was standing by the cooking stove and the fire burned her" [these stoves are about 18ins high and are most often used on the floor]"For burns we admit to d2 they don't stay on CHER"

Chief Nursing Officer comes in carrying paperwork and says "carelessness, all this is carelessness, we had oene yesterday 100 percent burns, upstairs now in D2 burn unit" "Mother mistook the petrol container for the kerosene...why would you be so stupid as to store them...." Burns Child is now looking upset and starts to cry, her mother asks" what do you want" "Moto" the child responds, "how many" the mother asks "two, two moto" the girls replies [she is using the local patua for motor or car ie toy car. "Don't worry your Daddy will come now and buy it for you".

The mother then tells me that the little girl just happened to be sitting near the stove when she refilled it from the container and splashed the petrol on the floor next to her. The mother was unhurt but the little girl has almost 18% 1st degree burns. When I ask about the mistake, she shakes her head "The two jerry can are yellow, but the petrol one dey smell well well, and we dey keep am far from stove , I think say, when they went to fill the kerosene, the aunty, she take the petrol one by mistake, so the mixing cause the fire to blow so.

Blue Lace is the third of 3 children and the only girl, older siblings are 9 and 7 respectively.

Vignette 18

"J WZM"was a 7 month old male infant from Mushin, Lagos, who presented with seizures
He was one of a set of triplets, born at the same facility his mother received her antenatal care. Triplets were delivered by Caesarean Section. He was fully I,,unized (RTH) and had been fed on Breast milk pap and water from birth
The working management plan involved the supportive management and seizure control while ruling out infectious causes of seizures including meningitis and cerebral malaria.

Impressions following the interview: The parents appeared to have engaged with CHER processes effectively overall. The strongest pointers to this are the purchase of required materials appears complete, and the father is available for errands and support.
The use of home based treatment by an educated mother presented an interesting issue for exploration , and her opinions on this are invaluable .
Following the outcome: Transferred to the wards, I was glad the child appeared to be progressing through the care processes unhindered

J WZDM 7 month Male

"We came in yesterday around 4 to 5 pm, he was convulsing for close to one hour."

[This mother spoke very clear and good English (HND holder) and these are direct quotations]

"At a time he became motionless, before this it was going from one side to the other. Then he changed colour and was cold. They chased us out ... i don't know how they revived him"

"he has been having this convulsion since Wednesday last week i gave him palmkernel oil to drink and rubbed it all over him...he calmed...thats what they use locally"

The mother has selected LUTH because "Here is close to me, we live at Cardoso" Cardoso Street Mushin is about a 15minute walking distance from the gate of the

hospital nearest CHER. However for most illnesses she goes to "May Clinics" private facility. … LUTH near pass So I just waka come[walked here] this time"". When she arrived at LUTH she says "they answered us ...they didn't waste much time. It was after they admitted us that they wasted time"

When she arrived at LUTH she says "they answered us ...they didn't waste much time. It was when they admitted us that they wasted time"

"He hasn't convulsed since we came but he cried all throughout he night because they asked me not to breastfeed him.

"He is a set of triplets" she tells me. When i ask about the other 2 " He is the first one… the second one died the next day, a girl and the third one is outside. He slept at home with my other wife" [she is referring to her sister in law a large woman in a green leopard print top sitting by the cot.

Her opinion on self -medication:

"Oh yes. I believe it is good to give them medicine in the house. Na all the time we dey say make we give them Chloroquine if dem get fever, no be so? This time oh I myself was surprised as the fever just continued, it should have come down so he could be fine. The sister and brothers all of them have medicine in the house, and if the medicine is left over... like now after the one he takes so, I will keep am for box. Lagos State give them for free, but who has the time to go to stand and collect new one, why? I have in the house not be so? The brother had fever not up to 2 months go now and the new one we buy that time we did not use all, so Aunty Researcher how I go thruway am? Myself, I like to buy medicine instead of Agbo sha, as per how do anyone know the real Agbo? (she winks and leans towards me) If na village Agbo

now, dat na another matter, these Lagos Agbo people…but at the Chemist and GH they give you syrup or other medicine so I like them.(I ask if she doesn't believe Agbo works) Hey Auntie Researcher no be say Agbo no dey work!!!! E dey work (she laughs) and how much for small Agbo.. na kobo kobo money (pence literally, worth very little) . It is just that as I don't know the …ok like when people come from Village, like your Mother or Aunties. If one of them bring Agbo, ehen (she laughs) I will collect!! After all that is what we all used before in those days. But people don't come Lagos anyhow again (as often)...you understand ...until Christmas, That is if we ourselves don't 'carry go' to our own (her husband's family) Village

She delivered the babies at the Federal Medical Centre Ebute Metta, Lagos, after doing her Antenatal care at the May Clinics "as many times as they asked me to come..it was at 6 months they sent me to FMC."wher she had her babaies via caeserian section.

Table 3: Age, gender length of stay among the children who died and their age groups and gender from CHER database June-December 2010

Age groups			Length of stay before death in days												Numbers of childre
			1	2	3	4	5	6	7	8	12	13	28	52	
Neonatal 0-1 month	Gender of patient	Male	24	7	3	2	1	1	1	-	-	2	-	-	41
		Female	19	4	1	1	-	-	1	-	-	-	1	-	27
	Total		**43**	**11**	**4**	**3**	**1**	**1**	**2**	**-**	**-**	**2**	**1**	**-**	**68**
Infant 1-12months	Gender of patient	Missing	1	-	-	-	-	-	-	-	-	-	-	-	1
		Male	14	3	2	2	-	-	-	1	1	-	-	-	23
		Female	10	1	-	-	1	1	-	-	-	-	-	1	14
	Total		**25**	**4**	**2**	**2**	**1**	**1**	**-**	**1**	**1**		**-**	**1**	**38**
13-24 months	Gender of patient	Male	1		1	-	-	-	-	-	-	-	-	-	2
		Female	3		1	-	-	-	-	-	-	-	-	-	4
	Total		**4**		**2**		**-**	**-**	**-**	**-**	**-**	**-**	**-**		**6**
25-36 months	Gender of patient	Male	-	-	-	-	-	-	-	-	-	-	-	-	
		Female	1	-	-	-	-	-	-	-	-	-	-	-	1
	Total		**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
37-48 months	Gender of patient	Male	-	-	-	-	-	-	-	-	-	-	-	-	-
		Female	2	-	-	1	-	-	-	-	-	-	-	-	3
	Total		**2**	**-**		**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**		**3**
49-60 months	Gender of patient	Male	3	1	-	1	1	-	1						7
		Female	2	1	1	-	-	-	-	-	-	-	-	-	4
	Total		**5**	**2**	**1**	**1**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**11**
	TOTAL All Children per day of death		**90**	**11**	**5**	**4**	**2**	**1**	**1**	**1**	**1**	**2**	2	**1**	**127**

Table 4: Showing the patterns of admission CHER from CN Database Nurses database from June-December 2010

	JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER		
OUTCOMES	Counts	% Month	Counts	% Month	Counts	% Month	Count	% Month	Counts	% Month	Count	% Total	Count	% Total	Total
Deaths	28	7.8	20	6.4	16	6.9	27	10.2	26	8.9	19	10.3	18	7.2	154
Discharge	169	46.9	166	53	95	41.3	114	43	132	45.4	84	45.7	99	39.4	859
Home															
ADMITTED CHER***	132	36.7	103	32.9	97	42.2	97	36.6	86	29.6	62	33.7	109	43.4	686
DAMA	31	8.6	24	7.7	22	9.6	27	10.2	47	16.1	19	10.3	25	10	195
Total	360	100%	313	100%	230	100%	265	100%	291	100%	184	100%	251	100%	1894

Table 5 Gender and age group Distribution from CHER database June-December 2010

	male	female	total
neonatal 0-1month	415	201	616
infant 1-12months	288	149	437
13-24 months	87	105	192
25-36 months	111	77	188
37-48 months	73	136	209
over 48 months	119	133	252
	1075	819	1894

Table 6 Gender and Age Distribution from 99 Observed Sample during This Study

age groups	male	female	total
neonatal 0-1month	12	3	15
infant 1-12months	21	13	34
13-24 months	3	1	4
25-36 months	6	7	13
37-48 months	6	1	7
over 48 months	18	8	26
		33	99

Table 7 Comparing percentage outcomes for 99 observed and CHER June =December 2010

Outcome at 24 hours	% outcomes observed for 99children observed	% outcomes reported June-December 2010
Admitted to wards	8	6
Admitted to CHER	33	19
Discharged Home	25	46
Discharged Outpatients	11	8
Referral Other Hospital	11	1
transfer to other UNIT	6	2
Dama	1	10
Died	5	8
	100	100

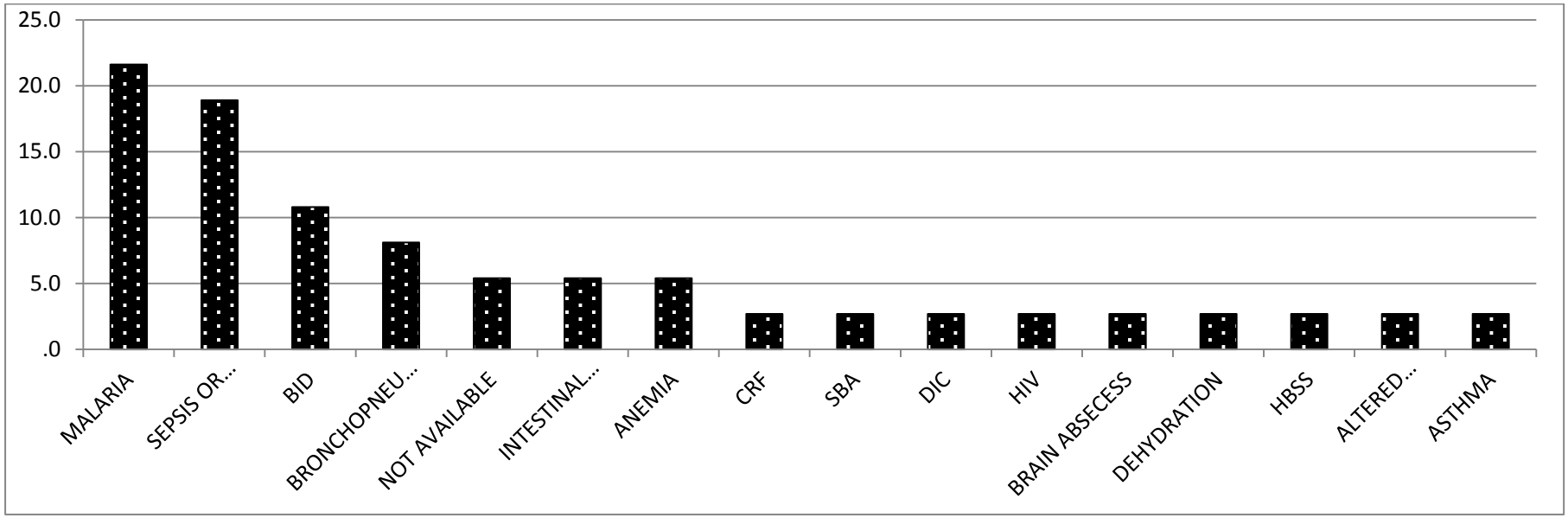

Figure 1: The percentage distribution of diagnoses of post-neonatal Deaths within 24 hours of Admission from CN database June 2010-December

APPENDIX E

Lagos State Private Hospitals

1. Afrimed Specialist Hospital,2B, Williams Street,Sawmaill,Gbagada,Lagos.08022837554
2. A And A Medical Diagnostic Centre, Ishaga Road, Surulere
3. AB 10, Specialist Hospital, Harmony Estate, Off Karaole Estate, Iju Road, Agege
4. AB Specialist Clinic, Tinubu Square, Lagos Island
5. AB Specialist Hospital Limited, Olugbende Street, Off Idimu Street
6. Abey K Medical Centre Ikeja Along Airport Road Lagos
7. Active Health Managers Limited, Dolphin Estate, Ikoyi
8. Adefemi Hospital, Ipaja
9. Adesola Clinic, Onobola street, Bariga
10. Agbonmagbe Olumide Memorial Specialist Hospital, 10 Lawal Street, Jibowu
11. Ahmadiyya Clinic (Hospital), Appa
12. Ahmadiyya Hospital, Ojokoro
13. Ajangbadi Central Hospital, 1, Adeola St. Salami B/stop, Afromedia, Ajangbadi.
14. Alalade Memorial Hospital, Ijesatedo
15. Alfer Hospital, Victoria Island
16. Alheri Hospital, Ojodu
17. All In Care Hospital, 17, Coker street Orimolade B/S ifako-ijaiye lagos, 08033044452, 08078537644
18. All Souls Clinics Limited, Ojo Road, Mile 2, Ajegunle, Apapa
19. Amazing Saints Hospital, Ikeja
20. Apapa General Hospital
21. Aruna Ogun Memorial Specialist Hospital, 3/4 Bamimosu Street, Ebute, Ikorodu
22. Ayo-Ade Oshin Memorial Hospital and Maternity Home, Hawley Street
23. Badamus Hospital, Lagos Airport Road Nigeria
24. Badagari General Hospital
25. BAF Eye Centre Ltd, Oba Adetona Street, Off Sura Mogaji Street, Ilupeju
26. Barnes Diagnostic And Heart Centre, Ajose Adeogun Street
27. Baylight Watch Hospitals Ltd, Ikorodu
28. Betta Hospital Ltd, Orile, Agege
29. Bimax Hospital and Maternity Home, Surulere Street, Dopemu-Agege
30. Bissalam Hospital, Ltd, Modupe-Shitta Street, Egbe
31. Bodet Medicare and Maternity, Alausa, Ikeja
32. Blue Cross Hospital, Ijaiye Road, Ogba Ikeja
33. Budo Specialist Hospital, By Peninsula Resort, Ajah, Lagos (www.budospecialisthospital.com)
34. Broad Clinic & Maternity Home, Oba Amusa Avenue, Off Alake
35. Calvary Medical Center 5 Silva Street Olorunsogo Mushin Lagos
36. Cathem Eye Hospital 78 Adeniyi Jones, Ikeja GRA
37. Chinedum Private Hospital, 55 Ojogbe Road, Ikorodu
38. Chironna Medical Centre, Adebola Street, off Adeniran Ogunsanya, Surulere
39. Christ Medical Centre, Randle Road, Apapa

40. Our Lord Christ Medical Centre, 11 Kodejoh street Ikeja, Lagos
41. Chromeu Medical Centre, Olufemi Samson Street, Okomalam
42. Citizen Medical Centre, 86 Norman Williams Street, S/West, Ikoyi. Lagos
43. City Hospital and Maternity Care, Jimoh Ojora Rd, Ajegunle
44. Clear View Optics Ltd, Alhaji Ribadu Road, South-West Ikoyi
45. Continental Hospital & maternity clinic. 11, Ago Owu Street off Kayode Street Onipanu Lagos.
46. Crest Consultant Clinic, Keffi Street, South-West Ikoyi
47. Critical Rescue International, HQ, Ikeja[1]
48. Crystal Hospital, 35 Charles Road, Akowonjo, Ikeja
49. Crystal Specialist Hospital, Egbeda Road, Dopemu-Agege
50. Debof Clinic Limited, 85 Ladipo Street, Off Palm Avenue, Mushin
51. Deji Clinic, Demurin Street, Ketu
52. Deji Clinic, off Daddy Savage Road, Fagba
53. Demola Hospital, 26 OLAIDE VILLAGE, Ikorodu
54. Deseret International Hospital, 23a Oduduwa Crescent G.R.A Ikeja
55. Diamond-shield Health Services Limited, Ikoyi
56. Divine Medical Centre 16 Akanbi Danmole Street, off Ribadu Road, Ikoyi [5]
57. Dolfac Medical Centre, Ibukun-Olu Street, Akoka
58. Dolu Hospital, 7, Sunmola Abayomi Street, Mafoluku - Oshodi
59. Dolu Medical Centre, Sunday Saidi, Egbeda
60. Doren Specialist Hospital, 1 Kemfat Road, Ajah
61. Dortem Specialist Hospital, Babs Animashhun Road, Surulere
62. Duro Soleye Hospitals, Allen Avenue, Ikeja
63. Ebutametta Health Center
64. Echos Hospital 102 Apapa Road
65. Ekemode Memorial Hospital and Women's Infirmary, Bode Thomas Street, Surulere
66. Eko Hospital, Mobolaji Bank Anthony Way, Ikeja
67. El-Bethel Hospital,Old Ojo Road
68. El-Shaddai Hospital, Iba
69. Emel Hospital, 21road, Z-close, Festac Town: http://www.emelhospital.org
70. F-Adeyemi Medical Services, , Agbado.
71. Fafolu Medical, 22 Fafolu Street, Mushin
72. Fanimed Hospital,Lily Road,LSDPC Medium Estate,Phase 4,Ogba,Ikeja
73. Fasanmi Hospital and Maternity Home, 5-7 Olori Street, Shogunle
74. Fatula Hospital, 12 Airport Road, Lagos
75. Federal Medical Centre, Railway Compound, Ebute Metta
76. First Consultancy Medical Centre, Obalende
77. First Consultant Hospital
78. First Foundation Medical Company Ltd, Opebi Road, Ikeja
79. Framag Specialist Hospital Opebi Road, Ikeja
80. Gbolayemi Clinic, Ladipo Oluwole Street, Apapa
81. General Medical Care, Ologun Agbaje Street, Victoria Island
82. German Friendship Specialist Hospital, GKS Street, Okota, Lagos
83. Georges Memorial Hospital, off Admiralty Road, Lekki
84. Global Hospital, 87 Orile Road, Agege
85. Global Medical Centre Services, Ologun Agbaje Street, Victoria Island

86. Gloryland Clinic, Odo Olowu Street, Via Apapa-Oshodi Express Way, Lagos
87. Gold Cross Hospital, Keffi Street, South-West Ikoyi
88. Gordons Hospital, 114,Riverside Crescent, Ikeja
89. Hand of God Hospital, 15 Hospital Road, Ikeja
90. Havana Specialist Hospital Ltd, Akerele Street (Teslim Fatusi Street), Surulere
91. Havilah Hospital . Havilah Busstop Ajah - Badore Rd. Ajah Lekki.
92. Holy Bethany Hospital, Ipaja Estate
93. Holy Family Hospital, Victoria Island
94. Hugo Medical Center, Lagos
95. Humana Hospital, Agindingbi, Ikeja
96. Iganmu Industrial Clinic, Eric Moore Close, Iganmu, Surulere
97. Ikorodu Clinic, 9 Muniratu Aleje Street, Ikorodu
98. TJ Samson Hospital,093 SURU VILLIAGE,IKORODU,LAGOS
99. Imperial Medical Centre, 65 Brickfield Road, Ebute Metta
100. International Hearing Centre, 8 Gabaro Close, Victoria Island [6]
101. Isalu Hospitals Limited
102. Jalupon Estate Hospital, Bode Thomas Street, Surulere
103. Joas Medical Diagnostix, Joas House, Ikotun
104. Joe Ben Hospital,Ikorodu Road
105. Jon-Ken Hospital, 20 Shobande Street, Off St. Finbarr's College Road, Akoka
106. J-Rapha Hospital,40 Addo-Langbasa Road.Ajah,Lagos.
107. Kamoras Hospital, Muri Okunola Street, Victoria Island
108. Kings Foundation Clinic Ltd, Olutoye Crescent, Off Adeniyi Jones Avenue, Lagos
109. Krev Medical Centre, Ajuwon
110. Krown Hospital, 11 Alhaji Sekoni Street,Off Alimosho road, Iyana Ipaja
111. Kuban Medical Centre, 31 Oloje Street, Papa-Ajao, Mushin
112. Kemta Hospital, 33 Modele Street,Surulere.
113. Labi Hosipital and Maternity Home. 13 Oziegbe Street, Ilupeju
114. Ladi-Lak Medical Centre. 53 Igi-olugbin st, Ladi-Lak, Bariga.
115. Ladkem Eye Hospital. 27 Nuru Oniwo Street, Off Aguda, Surulere.
116. Lafia Group Hospital, Wharf Road (Development House), Apapa
117. Lafia Surgery Hospital, 8 Olufemi Street, off Nathan Street, Ojuelegba, Surulere
118. Lagoon Hospital, Balogun Street, Ikeja
119. Lagos Lagon Hospital, Lagos Marina.
120. Lagoon Hospital, Marine Road, Apapa
121. Landay Satellite Clinic, Apapa Amusement Park, Apapa
122. Lapasat Hospital, Ipaja
123. Leo Specialist Hospital, Balogun Street, Lagos
124. Lex Medical Centre, Meiran, Lagos
125. Life Anchor Hospital,17 Bamishile Street, off Bameke Street Shasha, Lagos
126. Life Fountain Hospital, Allen Avenue, Ikeja
127. Lifegate Specialist Hospital, off Acme Road,Ogba
128. Lifeline Children Hospital, Ogunlana Drive, Surulere
129. Light Care Hospital, Victoria Island
130. Light Care Hospital, Victoria Island
131. Light Hospitals Limited, 15 Olumide Onanubi Street, Alimosho
132. Little Way Clinic, Moshalasi Street, Obalende
133. Living Spring Hospital, Anifowose Street

134. Longe Medical centre,126,Olusegun Osoba Road, Agbado Crossing, Agbado, Lagos
135. Maco Hospital, 11 Lagos Road, Ikeja
136. Madikem Clinic, Sobo Arobiodu Street, GRA, Ikeja
137. Mainland Hospital, Marina, Lagos
138. Makanaki Hospital,12 Sante Street, Ketu
139. Marantha Hospital, St. Finbarr's College Road, Akoka, Yaba
140. Marina Medical Centre, 4/6, Nuru Oniwo, Aguda - Surulere
141. Marina Medical Centre, Wesley House, 21/22, Marina, Lagos
142. Martins Hospital, Lagos-Abeokuta Express Road, Alagbado
143. Maryland Specialist Hospital, Anthony Village
144. May Clinics Ltd, Ilasa, Lagos [7]
145. May Clinics Ltd, Ilupeju Lagos [8]
146. Mayfair Hospital, Alfa-nla, Agege, Lagos
147. Maydelen Hospital, Araotic Street, Yaba
148. Medfad Medical Hospital, Folashoyebo Street, Ipaja
149. Medical Centre, Capricorn Block Ground Floor, Eleganza Plaza, Apapa
150. Medical Clinics Maternity Home, Abibu Oki Street
151. Modern Care Hospital, 2, Otunba Adenuga street, Silva Estate, Idimu
152. Motayo Hospital Services Ltd, Owodunni Street, Off Toyin Street, Ikeja
153. Mother & Child Hospitals, Adeniyi Jones, Ikeja
154. Mount Sinai Hospital Ltd, 105 Isolo Road, Egbe
155. Mount Sinai Hospital Ltd, 177/179 Borno Way, Ebute-Metta
156. Mount Sinai Hospital Ltd, 30 Falolu Street, Surulere
157. Mount Sinai Hospital Ltd, 32 Olanubi Street, Mushin
158. Mount Sinai Hospital Ltd, 9 Ajao Road, Off Adeniyi Jones Avenue, Ikeja
159. Movik Hospital Clinics, 12 Oyegunwa Street, Ladipo Estate
160. Mowe Hospital, Ibadan-Lagos Express way, Mowe
161. Mt. Zion Specialist Clinic, Adeolu Street, Surulere
162. Mubarak Special Clinic For Health, Bariga Road, Lagos.
163. Mucas Hospital, 9 Ogun Street, Iyana-Ipaja, Along Lagos-Abeokuta Expressway
164. New Ikeja Hospital, 15 Gbajobi Street, Ikeja [www.integrahealth.com.ng] - 08036879999
165. Newgate Hospital Limited Ogba, 84 Ogunnusi Road, Ojodu, Ikorodu
166. Newgate Hospital Limited, Ikorodu
167. Nimota Hospital, 8 Oroyinyin Street, Lagos Island
168. Nimbus Medical Centre,6 Kola iyaomolere Street,Barrack Rd, Ogudu
169. O & S Hospitals, Lagos
170. Ogah Hospital and Urology Centre, 18b Salvation Road, Opebi, Ikeja
171. Ojo General Teaching Hospital, 21 Alabi street, Akoka, Lagos
172. Okiki Clinic and Maternity Hospital, Lagos
173. Oluwatoyin Clinic, Ojota
174. Omni Medical Centre & Advanced Fertility Clinic, 18 Boyle Street, Onikan
175. Oshodi Tapa Memorial Hospital, Imam Dauda Street, Off Eric More, Surulere
176. Osuntuyi Medical Centre, 9 Alhaji Salisu Street, Obanikoro
177. Paelon Memorial Hospital, 22 Musa Yaradua Street, Victoria Island, Lagos
178. Parklande Specialist Hospital, Lagos
179. Pipe Street Medical Centre, Pike Street, Lagos

180. Plato Hospital, Shogunle, Lagos
181. Premier Hospital, Ogalode Close, Victoria Island
182. Promise Hospital,132 Dopemu Road Dopemu Agege,Lagos
183. Providence Christian Hospital, Awolowo Road, Ikeja
184. Providence Hospital, Itire Road, Surulere
185. Providence health and service centre,festac
186. Providence Hospital, Maduike street, Ikoyi
187. Q-life Family Clinic, 155A, Prince Ade-Odedina, off Sinari Daranijo, Victoria Island, Lagos
188. Rainbow Specialist Medical Center,1B Adedapo Williams Close Off Emeka Nweze Street off Admiralty Way Lekki Lagos http://rainbowspecialist.com/index.html
189. Rapha Specialist Hospital, Royal Cross Hospital, 24 Crown Estate, Lekki Peninsula
190. Reddington Hospital, 121 Idowu Martins Street, Victoria Island [9]
191. Reddington Hospital, 39 Issac John Street,G.R.A., Ikeja, Lagos.
192. R-Jolad Hospital,1 Akindele street,New Garage,Gbagada
193. Robby Medical Centre, Amje Alakuko, Lagos
194. Roland Hospital, Joseph Street, Lagos
195. Rophecca Medical Hospital, 166 Akowonjo Road Ikeja
196. Rotfol Medical Centre, Atunrase Street, off Ishaga Road, Surulere
197. Royal Medical Centre, 2 Medina Street, Lagos
198. Royan Hospital, 72 Aina Street, Ojodu, Ikeja
199. Safe Hope Hospital, 2 Kolu Street, Igando (safehopehospital@gmil.com) phone number +2348085190596
200. Safe-Way Hospital and Maternity
201. Samaria Hospital, 10 Debo Bashorun Street off Ali Dada Street,Okota
202. Saraki-Ikomi Group Clinics, Kofo Abayomi Avenue, Apapa
203. Shalom Medical Hospital, Alagbado
204. Shammar Hospital, 5 Epe strret, Amukoko
205. Shepherd Medical Centre (For Children), 2 Salvation Road, Opebi-Ikeja
206. Shepherd Specialist Hospital, 4th Avenue, E Close, Festac Town
207. Shigun Hospital, Ilupeju
208. Sinai Specialist Hospital, 19a Military Street, Onikan
209. Skimar hospital, 31 John Drive, Obafemi Awolowo Way, Ikeja, Lagos State
210. Smile 360 Dental Specialists, 16b maduike str, off Raymond Njoku, Ikoyi, Lagos (www.smile360ng.com)
211. Solad Medical Center, Solad bus-stop, Baruwa-Ipaja, Lagos.
212. Solid Rock Hospital, Ojodu, No 6 Akinsanya Street, off Ogunnusi Road. Ojodu
213. Standard Life Care Hospital, 5 Paul Street, Off Sanni Balogun Street, New Oko Oba, Lagos
214. St Claire Specialist Clinic 44 Apena St, Surulere
215. St. Catherine's Hospital, 38 Airport Road
216. St. Charles Hospitals Limited, Ayilara Street, Surulere
217. St. Claver Hospital, 312 Beside ETB Bank Building Ijaiye Road Ogba, Ikeja
218. St. Francis Hospital, Keffi Street, South-West Ikoyi
219. St. George Hospital Ltd., Makinde Road, Surulere
220. St. Georges Medical Centre, 6 Rasheed Alaba William Street, off Admiralty, Lekki Phase I
221. St. Ives Hospitals, Opebi, Ikeja

222. St. Louise Clinic, Abibu Oki Street, Lagos
223. St. Louise Medical Centre, Prince Court, Victoria Island
224. St. Mary's Specialist Centre, 11 Taoridi Street, Surulere, Lagos
225. St. Mary's Children's Clinic,38,Montgomery road, Yaba
226. St. Nicolas Hospital, Campbell Street, Lagos Island
227. St. Thelma's Hospital & Maternity Home, Anuoluwapo Street, Bariga
228. St. Thomas Hospital, 239 Adeola Santos, Street, Ikeja
229. Star Light Hospital,78 Olakolu street Ayobo Lagos
230. Strong Tower Hospital, Iju Ishaga Lagos
231. Subol Hospital, Idumota
232. Sunrise Cares Hospital, 234 Akowonjo Road
233. Surulere General Hospital
234. Syl Memorial Hospital, Akeem Akonju Street, Ikeja
235. Talent Specialist Hospital, Gowon estate, Ipaja
236. Teboree Clinic, Tokunbo Street, Lagos
237. Teju Industries Clinic Ltd, Creek Road, Apapa
238. Tetra Line Medical Centre, 10 Hospital Road, Isolo
239. The Clinic, Apena Street, Surulere
240. The Duke Medical, 26, Bamishile Street, Off Allen Avenue, Ikeja
241. Timu Hospital Group, Mushin Road, Isolo
242. Tolu Hospital, Old Abeokuta Road, Apapa
243. Tons Physiotherapy Clinics,37 Akobi Crescent,via fasoro str, Surulere, Lagos
244. Topaz Hospital and Specialist Clinics, 12 Adeniji Street, Surulere
245. Toun Memorial Specialist Hospital, Ikorodu.
246. Towers Hospital, Ikeja
247. Treasure Hospital, 1, Chief Obidegwu street, Unity estate, Iba, Lagos
248. Treasure-Hunt Hospital, 8 Abraham Road, Ikeja
249. Triumph Medical Center, 32 Unity road, Ikeja
250. Tropicana Hospital, Badagry
251. Uptown Medical Centre
252. Veta Hospitals Limited, 1 Ara
253. Vincent Maternity, Ikeja
254. Vones Specialist Hospital, Onike. Yaba
255. West-Care Specialist Hospital, Akowonjo.
256. White Chapel Hospital Ltd, Adebisi Awosoga Street, Dopemu-Agege
257. White Chapel Hospital Ltd, Obafemi Awolowo Way, Ikeja
258. Yaba Medical Centre, Agard Street, Yaba
259. Zenith Clinic, Kakawa Street
260. Zenith Medical Centre, 1, Adeyefa Street, off Abeokuta Expressway, Iyana Ipaja
261. Zoe Medical Centre, 43 Adeleke Street, off Allen Avenue, Ikeja
262. St. Emmanuel Hospital, Isolo Lagos
263. Hope Foundation Hospital, Along Ikeja Rd, Ikeja Lagos
264. South Shore Women's Clinic, Oniru, Lagos
265. Living Hope Hospital, Ikeja Lagos

The 24 Lagos Comprehensive Secondary Level Hospitals

1. Agbowa General Hospital
2. Ajeromi General Hospital
3. Alimosho General Hospital
4. Apapa General Hospital
5. Badagry General Hospital
6. Ebute Metta Health Centre
7. Epe General Hospital
8. Gbagada General Hospital
9. General Hospital Lagos
10. General Hospital, Akodo
11. General Hospital, Orile-Agege
12. Harvey Road Health Centre
13. Ifako Ijaiye General Hospital
14. Ijede Health Centre
15. Ikorodu General Hospital
16. Isolo General Hospital
17. Ketu Ejinrin Health Centre
18. Lagos Island Maternity Hospital
19. Mainland Hospital, Yaba
20. Massey Street Children Hospital
21. Mushin General Hospital
22. Onikan Health Centre
23. Somolu General Hospital
24. Surulere General Hospital